# 1994 ISSUE With more NEW products

*Continuing 27 years of service to TV broadcast, reception & distribution**

## RF FILTERS & OTHER PRODUCTS TO FACILITATE RECEPTION & DISTRIBUTION IN -

### CATV * PRIVATE CABLE * TVRO * FM & TV * BROADBAND LAN

Dear Customer:

Here's our new 1994 catalog, with more new products. Our prices, the lowest in the industry, continue to drop as a result of increasing demand. Check our price list! These new products resulted from your repeated requests or indicated needs over the past year. This process was a continuation of our practice to let our customers write our catalog.

If you don't see what you need in this catalog, tell us and we'll make it for you FAST - as we have done for the past 27 years!

Thank you for your confidence and increased business this past year. All of us at C&E look forward with pleasure to serving you again in 1994.

Emily Bostick,
President

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**The Bosticks have provided product firsts to their worldwide customers since 1967.*
*Emily, Glyn Bostick & their associates, originated the products now considered standard in TV-related facilities which broadcast, receive and/or distribute programming or data.*

***EFFECTIVE SOLUTIONS***
***AT LOWEST INDUSTRY PRICES***
***PRODUCED BY A QUARTER CENTURY***
***OF EXPERIENCE SERVING TV FACILITIES***

BOSTICK FILTER DIVISION
EEEEEEEE COMMUNICATIONS & ENERGY CORP
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# TV CHANNEL BANDPASS FILTERS

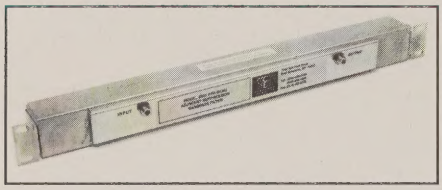
F Connectors, 75 Ohms, NTSC, PAL, SECAM or CHANNEL BANDWIDTHS

For cleaning up modulator outputs or for off-air pre-selection

## VHF

Any channel 50-300 MHz

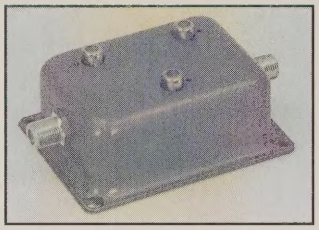
### 4001BPA Adjacent Suppresion



Lower aural and upper video trapped >25db with >12db on balance of adjacent channel. Thru loss 4db to 6db depending on channel. Mounts on 19" panel 1.75" wide.

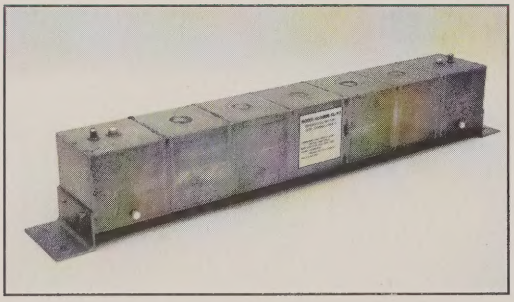
Any channel 50-300 MHz

### 4001BPS Semi-Adjacent Suppression



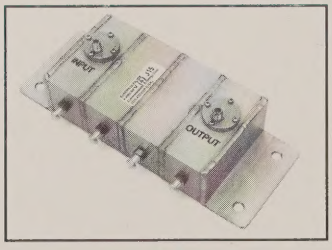
25db on semi-adjacents. Thru loss2.5db typical. 1x2x3"case has four mounting holes.

## SUPER/HYPERBAND 4001BPH-(CHAN)

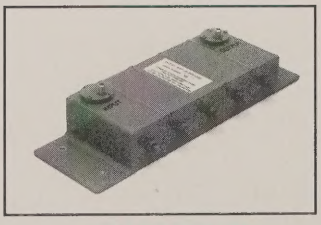


**4001BPH** is factory set cut-to channel 300-450 MHz. > 20 db on lower sound and upper video. All welded aluminum construction yields < 1db through loss. Size: 3x6x13"

## GENERAL PURPOSE UHF BPF




**4001BPU(4)**



**4001BPU(5)**

| | *3 Cavity* **4001BPU(3)** | *4Cavity* **4001BPU(4)** | *5 Cavity* **4001BPU(5)** |
|---|---|---|---|
| *Pass Loss:* | 0.5db | 0.7db | 1.00db |
| *15db* | +/-8 MHz | +/-7 MHz | +/-6 MHz |
| Reject: *25db* | 13 | 9 | 7 |
| *40db* | 22 | 13 | 9 |

(VSWR < 1.35)

*Specify 75 Ohm (Type F Connectors) or 50 Ohm (BNC Female Connectors)*

All aluminum, welded for extreme ruggedness. Tunable to other channels within their band (470-650 MHz & 650-890 MHz).

For sealed, weatherized models order W4001BPU( ).

# PRICE LIST

Catalog
CABLE INTERNATIONAL/94
Revised JULY 1, 1994

**PRODUCT SELECTION ASSISTANCE** Need help selecting the product you need? Call us: We've been in the "CATV operating problem" business for 25 years. Or, have a special problem that needs a brand new product? *Call us!*

**Delivery:** Most products are shipped within 10 days, with many available from stock. Need a "rush" delivery? Let us know at the time you place your order. A slight surcharge may be necessary in some cases.

**Shipping:** FOB our plant. Products become customer property when we deliver to the carrier. Unless specified by you, we ship UPS ground US/Canada and via air freight for other destinations. We can ship through a wide range of international shipping carriers.

**Payment:** We bill open account to customers who have established credit with us. All custom products require a 30% deposit with order. Invoice balance is due within 30 days of invoice (shipping) date with a 1% discount if payment is made within 15 days. Remittance is to be in $US, mailed to address on our invoice or wire transferred to our bank account. Call or fax us for wire transfer instructions.

We will fax a credit application to new customers desiring an open account and will process the application while filling their initial order. Otherwise, if first order is not prepaid, we will enclose a credit application in first C.O.D. shipment. We also accept the following credit cards:

VISA MASTERCARD AMERICAN EXPRESS

**Warranty:** We guarantee, to the original buyer, for one year, that our products will have no defects in material, workmanship or performance to our published specifications. Our sole responsibility, in case of such defects, is to repair, replace or refund, at our option, any product returned to us, freight paid, and verified by us to be defective.

**Returns:** If you need to return a product to us, please call us for return instructions and to get an estimate of repair or restocking charges, if applicable. Items with their prices marked ** are "made-to-order" and are returnable only for warranty repair. All other products are assembled from interchangeable parts at the time of your order. Their return incurs a 10% restocking charge, except where special arrangements have been made in advance.

Write To Us In Any Of The Following Languages:

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JAPANESE AND CHINESE

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Canada & US: 800-882-1587

## BANDPASS FILTERS

| Part | #Page | Description | | Price | Delivery Days |
|---|---|---|---|---|---|
| 4001BPA | 2 | Adjacent Channel BPF | Channel 2-13 | $ 150 | 15 |
| | | | Channel 14-36 | 175 | 15 |
| | | Add for Outdoor Case | | 49 | 15 |
| 4001BPFM | 3 | Full FM BPF | | 195 | 15 |
| 4001BPH | 2 | Super/Hyperband | | 690 | 15 |
| 4001BPS | 2 | Semi-Adjacent Channel BPF | Channel 2-36 +FM1, 2, 3 | 95 | 15 |
| | | | Channel 37-61 | 110 | 15 |
| | | Add for Outdoor Case | | 10 | 15 |
| TXBP-(CH #) | 3 | Small Economy BPF | Channel 2-36 | 49 | 15 |
| 4001BPN** | 3 | Narrow BPF | | 85 | 15 |
| | | Add for Outdoor Case | | 10 | 15 |
| 4001BPU (3) | 2 | UHF BPF 3 Cavity | | 225 | 15 |
| 4001BPU(4) | 2 | UHF BPF 4 Cavity | | 275 | 15 |
| 4001BPU(5) | 2 | UHF BPF 5 Cavity | | 325 | 15 |
| 4001WBP-(Fo) (BW) | 3 | Wide BPF (Custom) | *Quoted to your specifications* | | 30 |
| 4634-(Fo) | 3 | Narrow FM, Tunable BFP | 88-108 MHz | $ 425 | 30 |

## CHANNEL DELETION FILTERS

| | | | | | |
|---|---|---|---|---|---|
| 2500- | 4 | Channel Deletion Filter | Channel 2-13 | $ 650 | 15 |
| | | | Channel 14-22 | 675 | 15 |
| | | | Channel 23-36 | 750 | 15 |
| | | | Channel 37-44 | 850 | 15 |
| | | Add for Outdoor Case | | 49 | |
| X2500 | 4 | 750 Bandwidth (Add $150 to model 2500 price) | | | 15 |
| 2501-(CH #) | | New Hyperband Channels Adj. 4dB | | $ 975 | 30 |
| | | Temperature Compensated | | 1350 | 30 |
| 2599- | 4 | Economical Deletion Filter | Channel 2-36 | 95 | 2 |
| 2599P | | Panelized 2599 | Channel 2-36 | 110 | 30 |
| 2601- | | Noise Filter* | Channel 2-36 | 49 | 2 |

**New Tubular Trap with 40dB Notches on Video, Sound & Midchannel*

| | | | Cut-Off Freq | Loss (db) at Fc Adj | Loss (db) at Fc Semi-Adj | Transition Adj | Transition Semi-Adj | |
|---|---|---|---|---|---|---|---|---|
| 2550- | 4 | Multiple Channel | 54-88 MHz | 4.0 | 3.0 | $ 650 | $ 450 | 21 |
| | | Deletion Filters | 120-174 MHz | 5.0 | 3.5 | 700 | 425 | 21 |
| | | | 174-216 MHz | 6.5 | 4.0 | 750 | 450 | 21 |
| | | | 216-300 MHz | 8.5 | 4.5 | 775 | 475 | 21 |
| **Price each transition and add $200 for total filter price.** | | | 300-348 MHz | 10.0 | 5.5 | 800 | 500 | 21 |

## SHARP INTERFERENCE NOTCH FILTERS

| | | | | | |
|---|---|---|---|---|---|
| CEC-310 | 8 | Tunable Notch | 470-860 MHz | $ 275 | 15 |
| 500TN-LO | 8 | Tunable Notch | 54-88 MHz | 95 | 7 |
| 500TN-FM | 8 | Tunable Notch | 88-108 MHz | 95 | 7 |
| 500TN-MID | 8 | Tunable Notch | 130-165 MHz | 95 | 7 |
| 500TN-HI | 8 | Tunable Notch | 160-222 MHz | 95 | 7 |
| 4001CT** | 8 | Cut-To-Freq. | 54-806 MHz | 85 | 15 |
| | | Add for Outdoor Case | | 10 | 15 |
| 4001CTU** | 8 | UHF Ultra Narrow | | 119 | 15 |
| 4001CTUD** | 8 | Double UHF Notch | | 238 | 15 |
| 4001CTV** | 8 | VHF Custom Notch | | 85 | 15 |

## CUSTOM LOWPASS & HIGHPASS FILTERS

| | | | Cut-Off Freq | Loss (db) at Fc Adj | Loss (db) at Fc Semi-Adj | Transition Adj | Transition Semi-Adj | |
|---|---|---|---|---|---|---|---|---|
| 4001LPB, 4001HPB** | 5 | Brickwall Lowpass & | 54-88 MHz | 4.0 | 3.0 | $ 850 | $ 600 | 15 |
| | | Highpass Filter | 120-174 MHz | 5.0 | 3.5 | 900 | 625 | 15 |
| | | | 174-216 MHz | 6.5 | 4.0 | 950 | 650 | 15 |
| | | | 216-300 MHz | 8.5 | 4.5 | 975 | 675 | 15 |
| **Price each transition and add $200 for total filter price.** | | | 300-348 MHz | 10.0 | 5.5 | 990 | 700 | 15 |
| | | Add for Outdoor Case $49 | | | | | | 21 |
| 4001LPG** | 7 | General Purpose Lowpass | | | | | $ 65 | 10 |
| 4001HPG** | 7 | General Purpose Highpass | | | | | 65 | 10 |
| | | Add for Outdoor Case | | | | | 10 | 10 |

| Part | #Page | Description | | Price | Delivery Days |
|---|---|---|---|---|---|
| **TV BASEBAND LOWPASS FILTERS** | | | | | |
| 400/LPV5 | 7 | General Purpose | | $ 125 | 15 |
| 400/LPVE | 7 | Equalized 50ns | | 360 | 30 |
| 400/LPV | 7 | Unequalized 300ns | | 295 | 30 |
| **BANDSPLITTERS (DIPLEXERS)** | | | | | |
| 2800-38 | 7 | Cross 38 | | $ 69 | 15 |
| 2800-51 | 7 | 51 | | 69 | 15 |
| 2800-98 | 7 | 98 | **NOTE:** | 69 | 15 |
| 2800-195 | 7 | 195 | **Add $10.00 for power** | 69 | 15 |
| 2800-204 | 7 | 204 | **passing on hi-leg.** | 69 | 15 |
| 2800-219 | 7 | 219 | | 69 | 15 |
| 2800-630 | 7 | 630 | | 69 | 15 |
| 2800VB | 7 | Equalized Video Splitter (<300ns) | | 375 | 30 |
| 2800VBE | 7 | Equalized Video Splitter (< 50ns) | | 425 | 30 |
| **CO-CHANNEL, WIDEBAND NOISE, ADJACENT FM, HARMONIC RECEPTION SUPPRESSOR** | | | | | |
| 3903 | 10 | Tunable 2-6: | 3903-2/6 | $ 395 | 30 |
| | | FM: | 3903-FM | 395 | 30 |
| | | 14-22: | 3903-A/I | 395 | 30 |
| | | 7-13: | 3903-7/13 | 395 | 30 |
| | | Cut-to-Channel | 2-FM-13 | 295 | 30 |
| **A special operating and application brochure is shipped with 3903 - A free pre-sale copy is available - *Ask For It!*** | | | | | |
| DPI-100 | 10 | DPI Eliminator | | $49 | 30 |
| **CHANNEL REPROCESSING NETWORKS** | | | | | |
| BDN- | 6 | Batch Descrambling Network | 2-6 | $ 895 | 15 |
| | | | 7-13 | 1,040 | 15 |
| | | | 14-22 | 1,040 | 15 |
| | | | 23-36 | 1,040 | 15 |
| CPNA- | 6 | Channel Patch-In | 2-6 | $ 795 | 15 |
| | | w/Adjacent cut-off BPF | 7-13 | 950 | 15 |
| | | | 14-22 | 950 | 15 |
| | | | 23-36 | 950 | 15 |
| CPNS- | 6 | Channel Patch-In | 2-6 | $ 725 | 15 |
| | | w/Semi-adjacent BPF | 7-13 | 855 | 15 |
| | | | 14-22 | 855 | 15 |
| | | | 23-36 | 855 | 15 |
| CPNN- | 6 | Channel Patch-In | 2-6 | $ 675 | 15 |
| | | w/o BPF | 7-13 | 810 | 15 |
| | | | 14-22 | 810 | 15 |
| | | | 23-36 | 810 | 15 |
| **POSITIVE ENCODING & VIDEO ENHANCING** | | | | | |
| 900-(IF) | 8 | Intermediate Frequency Encoders | | $ 330 | 7 |
| 900-(CHNL) | 8 | RF Channel Encoders | | 440 | 30 |
| 950 | 8 | Baseband Video Enhancer | | 440 | 30 |
| **FM CARRIER NOTCH FILTERS** | | | | | |
| CTFM Notch | 9 | | 88-108 | $ 85 | 10 |
| **AML PILOT TRAP** | | | | | |
| TXPC-73.956 | 9 | | | $ 35 | 15 |
| **TERRESTRIAL INTERFERENCE FILTERS FOR PROFESSIONAL TVRO** | | | | | |
| 4001BCT-(Fo) | 20 | | | $ 125 | 15 |
| 4001BPV-(Fo) | 20 | | | 150 | 15 |
| 4001BP-(IF) | 20 | | | 150 | 15 |
| 4001LP5 | 20 | | | 95 | 15 |
| CEC-458 | 20 | | | 750 | 30 |
| CEC-459 | 20 | *Inquire for multiple notches CEC-459-2, -3, -4, -5, -6* | | 250 | 7 |
| C3903 | 20 | | | 3000 | 30 |
| L3903 | 20 | | | 3000 | 30 |
| TXTI | 20 | | | 49 | 2 |

# PRICE LIST

## FOR PAY-TV AND INTERFERENCE FILTERS

*Lower Prices for Your Fast Small Quantities*

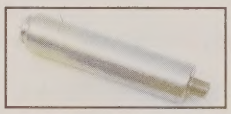
### TIERING TRAPS

| | 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| **STANDARD** | | | | | | | | |
| TXLP-(LowPass) | 19.50 | 13.25 | 11.50 | 10.25 | 9.75 | 9.25 | 9.00 | 8.80 |
| TXHP-(HighPass) | 19.50 | 13.25 | 11.50 | 10.25 | 9.75 | 9.25 | 9.00 | 8.80 |
| TXBS-(Bandstop) | 19.50 | 13.25 | 11.50 | 10.25 | 9.75 | 9.25 | 9.00 | 8.80 |

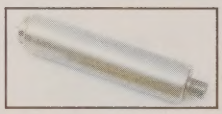
**CUSTOM:** **Use above prices but add $50.00 one-time design charge to your order. (Not required on reorders).**

### TRAPS FOR VIDEO, AUDIO, FM, UHF, INTERFERENCE & SCRAMBLING

TXNT-Negative Traps

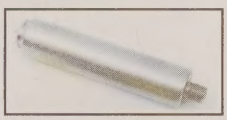


TXPT- Positive Traps



TXCS- Audio Traps

TXVS- Video/Audio Combination



TXSF- Specified Frequency Traps

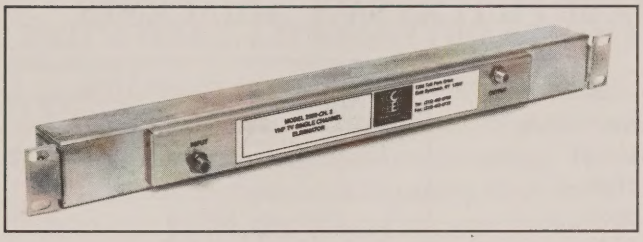
TXFM- FM Traps

TXUH- UHF Traps

| | | 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|
| TXNT- | (Ch# 2-36) | 7.50 | 7.05 | 6.60 | 6.25 | 5.85 | 5.50 | 5.20 | 4.85 |
| (HRC) | | 12.50 | 10.65 | 9.20 | 8.10 | 7.20 | 6.45 | 5.90 | 5.35 |
| | (Ch# 37-50) | 12.50 | 10.65 | 9.20 | 8.10 | 7.20 | 6.45 | 5.90 | 5.35 |
| TXPT- | (Ch# 2-13) | 8.00 | 7.65 | 7.35 | 7.10 | 6.80 | 6.50 | 6.25 | 6.00 |
| | (Ch# 23-25) | 13.00 | 11.25 | 9.95 | 8.95 | 8.15 | 7.45 | 6.95 | 6.50 |
| TXCS- | (Ch# 2-36) | 12.50 | 10.65 | 9.20 | 8.10 | 7.20 | 6.45 | 5.90 | 5.35 |
| TXVS- | (Ch# 2-36) | 13.00 | 11.25 | 9.95 | 8.95 | 8.15 | 7.45 | 6.95 | 6.50 |
| TXSF- | (54-450 MHz) | 12.50 | 10.65 | 9.20 | 8.10 | 7.20 | 6.45 | 5.90 | 5.35 |
| TXUH- | (Ch# 14-83) | 29.50 | 25.25 | 21.60 | 18.45 | 15.80 | 13.50 | 11.55 | 9.90 |
| TXFM- | (88-108 MHz) | 12.50 | 10.65 | 9.20 | 8.10 | 7.20 | 6.45 | 5.90 | 5.35 |
| DELIVERY If not in stock we can ship in approximately: | | 10 DAYS | 10 DAYS | 14 DAYS | 14 DAYS | 14 DAYS | 21 DAYS | 28 DAYS | 28 DAYS |

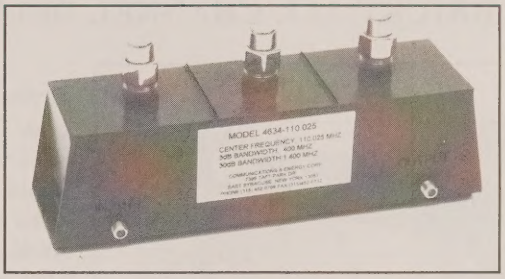
| | | |
|---|---|---|
| 4001PTS | Positive Traps for 222-450 MHz - | INQUIRE |
| 4001PTU | Positive Traps for UHF - | INQUIRE |

## FULL FM BPF



4001BPFM has <3db loss 88-108 MHz
and >40db 83.25 & 115 MHz. Model
4001BPFMT also traps 87.75 MHz
>40 db and passes 92-108 MHz
Both come with brackets for rack mounting.

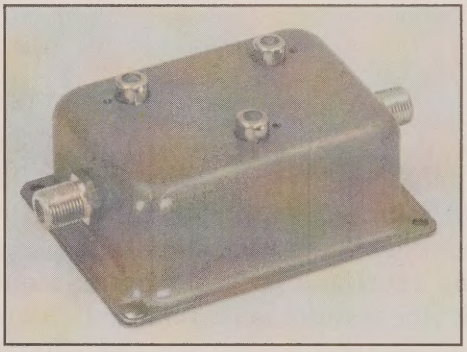
## NARROW FM BPF, Tunable 88-110 MHz

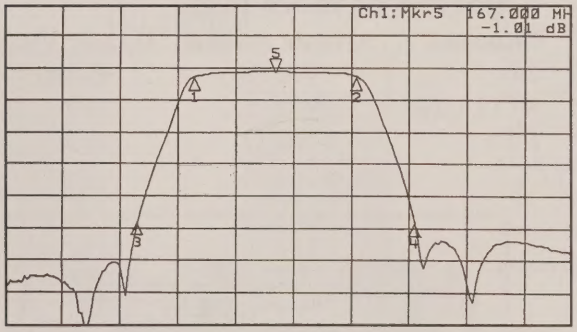


4634-(Fo) is factory set to your
frequency, but retunable. 3 db BW
is 400KHz with 4 db loss typical.
30 db at +/- 700 KHz.

## VHF CARRIER BPF

4001BPN has approximately 2 MHz BW for
system test or leakage meter preselector.
20 db+/-3MHz.
Available 25-300 MHz.
Loss 2db(25 MHz) to 7db(300 MHz).






## CUSTOM WIDEBAND BPF

4001WBP-(Fo) (BW)
Made-to-order for center frequencies 5-300
MHz. At right is response of wideband BPF
centered at Fo=167 MHz with BW=28 MHz.

## AGILE MODULATOR BPF

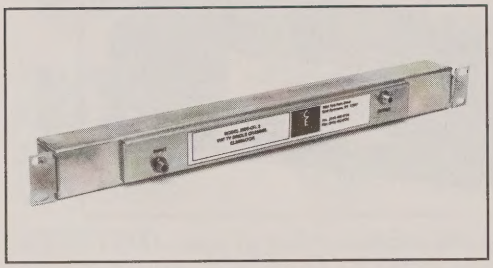
TXBP-(CH#) screws to agile
modulator to reduce system
noise level. For channels 2-36
20db +/- 15MHz, thruloss < 5db.

# TV CHANNEL DELETION FILTERS

For Reinsertion of New Programming

Connectors F Female (75 Ohm)

## BRICKWALL CHANNEL DELETION/REUSE FILTERS SAVE ADJACENTS

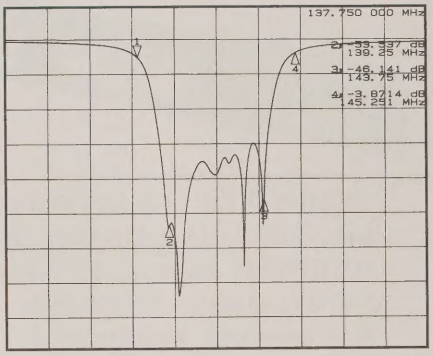


(Has brackets for panel mounting)
The loss spectrum of type 2500-(CH#) filters track the RF channel signal spectrum, to clear the channel for reuse. Adjacents remain in service.

| | |
|---|---|
| Passband: | 5 - 550 MHz** |
| Loss: | 1db +/- 0.5db |
| AC/DC passing: | 2A/110V |
| Video carrier loss: | > 50db |
| Color carrier loss: | > 50db |
| Aural carrier loss: | > 35db |
| MidChannel: | > 30dB |

**Adjacent channel loss:**

| Channel | Lower Audio | Upper Video |
|---|---|---|
| 2-6 | 4.0db | 3.0db |
| A-I (14-22) | 6.0 | 4.0 |
| 7-13 | 6.0 | 4.0 |
| J-HH (23-44) | 8.0 | 6.0 |

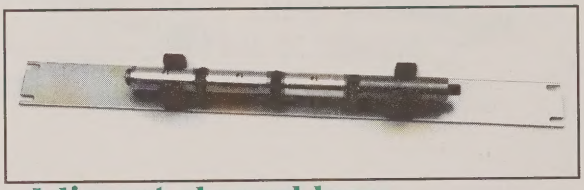



***For 750 MHz bandwidth order model X2500-(channel).*

## LOW COST CHANNEL DELETION/REUSE - SAVE SEMI-ADJACENTS

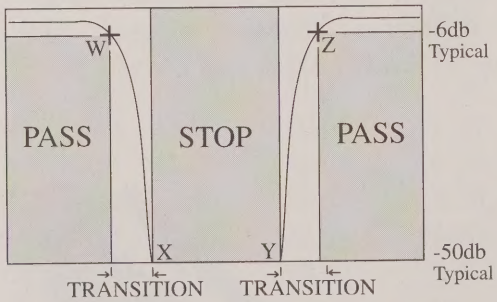
Comes on panel (2599P)* or alone (2599). These lower cost filters have the same in-channel response as 2500, but have greater adjacent loss. Use it where there is no adjacent channel or where the higher loss is tolerable. An affordable TVRO residential patch-in.

*19" rack panel $1^{3/4}$" wide

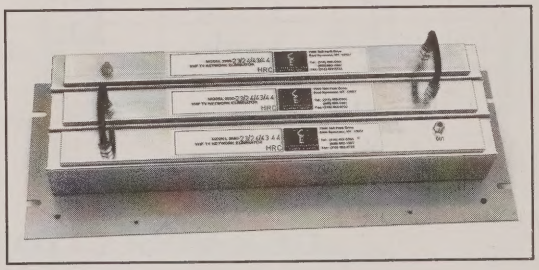


**Adjacent channel loss:**

| Channel | Lower Audio | Upper Video |
|---|---|---|
| 2-6 | 7.0db | 6.0db |
| A-I (14-22) | 9.0 | 7.0 |
| 7-13 | 11.0 | 9.0 |




Type 2550 - W/X/Y/Z filter network deletes a block of contiguous channels for (X to Y) for reinsertion. Order by substituting channel numbers (see right). W & X (and Y & Z) can be adjacent channels, or semi-adjacent. *(Note: where transition desired is >8% of frequency, inquire about low cost tiering traps).*



(Mounted on 19" rack panel)

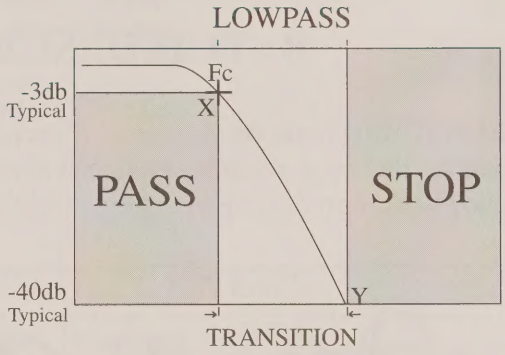
**W= First channel saved below notch**
**X= First deleted channel**
**Y= Last deleted channel**
**Z= First channel saved above notch**

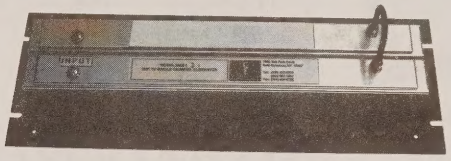
# BRICKWALL LOWPASS AND HIGHPASS DELETION/REUSE FILTERS

## BRICKWALL LOWPASS DELETION FILTERS

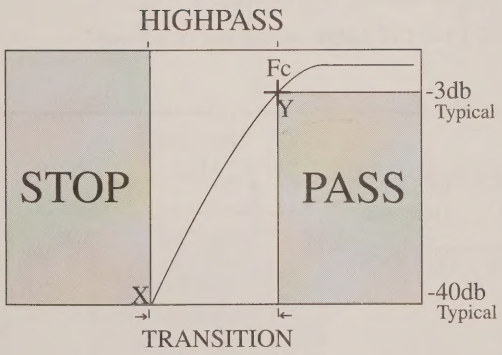
Type 4001LPB-X/Y "brickwall" lowpass filter deletes a contiguous block of higher channels to allow reinsertion of new programming without interference from original programming. They delete channel "Y" and all higher channels while passing all channels "X" and below. To order your model, simply substitute your channels for "X" and "Y". "X" & "Y" may be adjacent channels, or may have a transition band of one or more channels. Filters with wider transitions are less expensive. (See price list)

*(Note: Where a transition of 8% or more of frequency is allowed, inquire about our lower cost tiering traps)*



**4001LPB-X/Y** comes on 19" rack panel 5.25" wide




## BRICKWALL HIGHPASS DELETION FILTERS

Type 4001HPB-X/Y "brickwall" highpass filter deletes a contiguous block of lower channels to allow reinsertion of new programming without interference from original programming. They delete channel "X" and below while passing channel "Y" and higher channels. To order your model, simply substitute your channels for "X" and "Y". "X" & "Y" may be adjacent channels, or may have a transition band of one or more channels. Filters with wider transitions are less expensive. (See price list)

*(Note: Where a transition of 8% or more of frequency is allowed, inquire about our lower cost tiering traps.)*

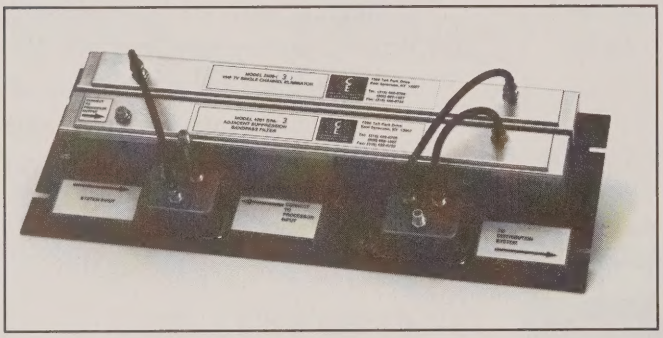
**4001LPB-X/Y** comes on 19" rack panel 5.25" wide

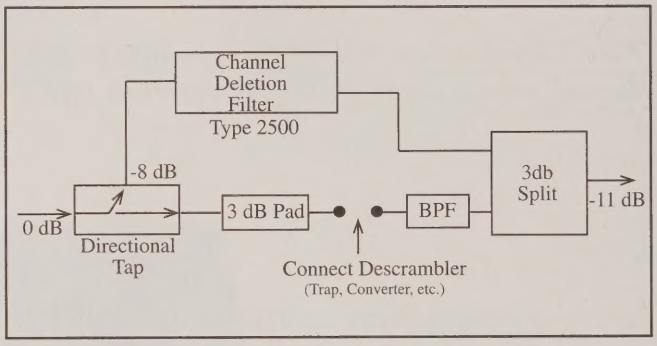
# CHANNEL REPROCESSING NETWORKS

*Batch Descrambling Networks (BDN) & Channel Patch-In Networks (CPN)*
*Available 50-300 MHz (Channels 2-36), F Connector (75 ohms)*
*Available for NTSC, PAL, SECAM, IRC, HRC, Inverted, Offset*

## BATCH DESCRAMBLING NETWORKS (BDN)

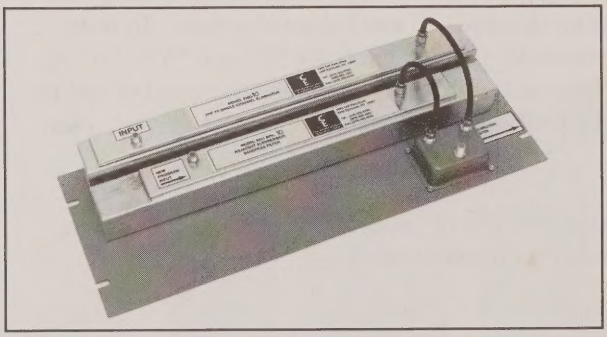
BDN-(CH#) comes on standard 19" rack panel 7" wide. Connect your descrambler (trap, synch suppress, etc.) and the incoming scrambled channel leaves the network on line & unscrambled. BDN also batch converts or allows other processing of selected channel. Key component is our channel deletion filter 2500.



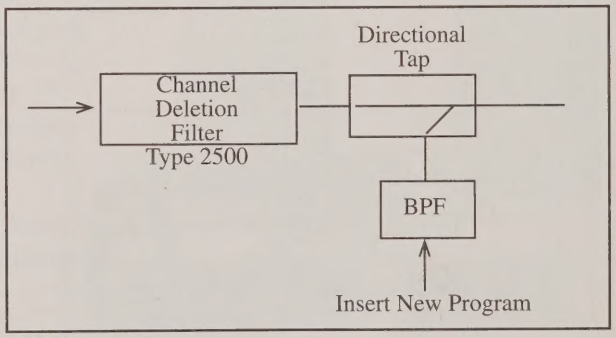



## CHANNEL PATCH-IN NETWORK (CPN)

CPN- is placed in-line, in a CATV or private cable network. It deletes a selected incoming channel and allows insertion of new programming in the channel slot. The VCR or live programming is inserted through a bandpass filter connected to a directional tap. The sharp bandpass filter prevents any spurious VCR or modulator signals from causing interference to adjacent channels.

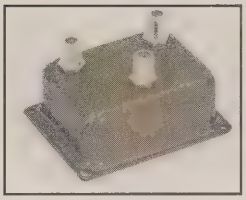


CPN comes on standard 19" rack panel 7" wide.




**CPNA:** *Has sharp, adjacent cut-off bandpass filter.*
**CPNS:** *Has semi-adjacent cut-off bandpass filter.*
**CPNN:** *Has no bandpass filter (for clean modulators).*

# BANDSPLITTERS

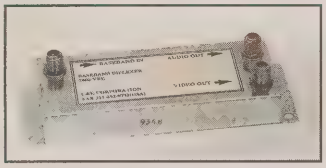


Passband loss <1, except < 3db at band edges. Mutual isolation > 25db.
AC/DC passing on low leg.
Add "H" before model # for AC/DC passing on high leg also.

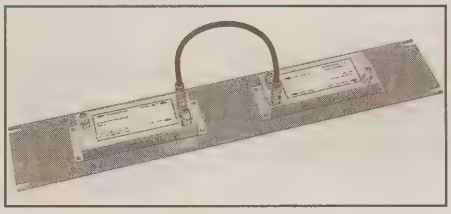
| Model Number | Crossover Freq-MHz | Lower Passband | Upper Passband |
|---|---|---|---|
| 2800-38 | 38 | 0-33 | 54-500 |
| 2800-51 | 51 | 0-48 | 54-500 |
| 2800-98 | 98 | 0-88 | 108-500 |
| 2800-195 | 195 | 0-175 | 215-500 |
| 2800-204 | 204 | 0-186 | 222-500 |
| 2800-219 | 219 | 0-210 | 228-500 |
| 2800-630 | 630 | 0-600 | 660-890 |

# BRICKWALL VIDEO BASEBAND DIPLEXERS

2800VB & 2800VBE
INPUT: 0-10 MHz RL > 15db
VIDEO BAND 0-4.2 MHz < 1db to 3.58 MHz
< 3db at 4.2 MHz
AURAL BAND 4.5 MHz < 3db
CHROMA DELAY: 2800VB < 300ns,
2800VBE < 50ns



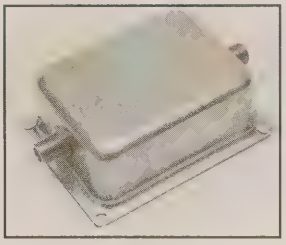
**2800VB, 2800VBE**



**2800VBE**
Paired for baseband scrambling.

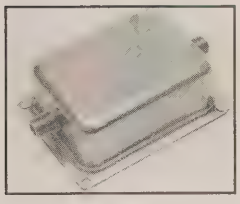
# TV BASEBAND LOWPASS FILTERS

**GENERAL PURPOSE**
**400/LPV5**
0-4.2 MHz: < 1db
35db STOPBAND 7-450MHz



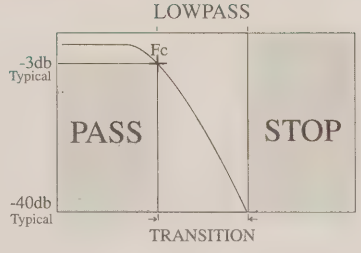
**EQUALIZED**
**400/LPVE**
EQUALIZED, BRICKWALL 400/LPV, 400LPVE
0-4.20 MHz: <3db Loss & >15db RL
0-3.58 MHz: <1db & Ripple < +/- 0.25db
40 db STOPBAND: 4.5 - 10 MHz
CHROMA DELAY: 400/LPVE <50ns
400/LPV <300ns

# CUSTOM LOWPASS & HIGHPASS FILTERS

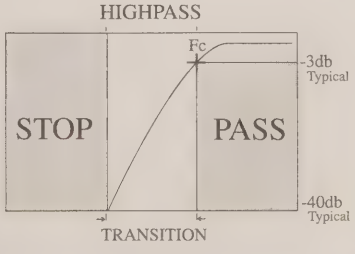


**Lowpass 4001LPG-(Fc)**
**Highpass 4001HPG-(Fc)**

| Fc(MHz) | TRANSITION* |
|---|---|
| 4- 25 | 3MHz |
| 25 -50 | 4 |
| 50 -100 | 6 |
| 100 -200 | 8 |
| 200 -300 | 12 |
| 300 -400 | 18 |
| 400 -500 | 22 |




These flat response filters have < 1 db loss except 3db at your specified cut-off frequency (Fc) (4-500 MHz). Ripple is less than 0.5db.
50 ohm models (BNC conn) available to order.

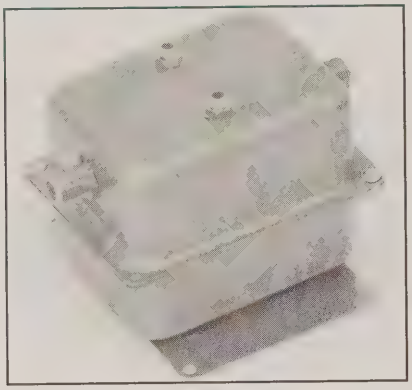



**Where larger loss or transition can be tolerated, see tiering filters described on page 14.*

# FILTERS FOR INTERFERENCE SUPPRESSION

Connectors: F Female (75 ohms) or BNC Female (50 ohms)

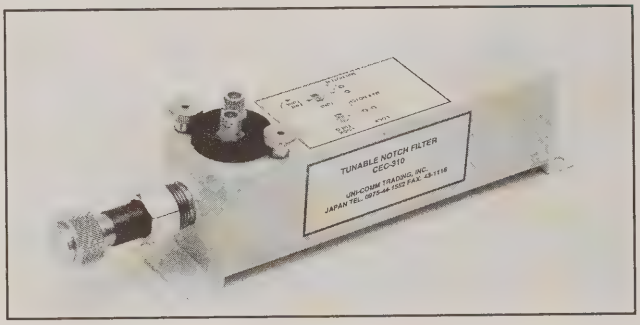
## TUNABLE NOTCH FILTERS



**V H F: 500TN**

Two notches can be independently screwdriver-tuned to two different frequencies or can be tuned to the same frequency to suppress a carrier 40db. The notch has a 3db bandwidth of approximately 3 MHz.

| | |
|---|---|
| 500TN-LO | 54-88 MHz |
| 500TN-FM | 88-108 |
| 500TN-MID | 130-165 |
| 500TN-HI | 160-222 |

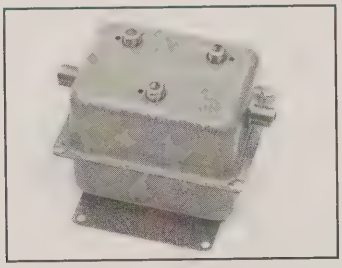



**U H F: CEC-310**

A course frequency adjustment (pushrod) tunes quickly to any frequency 470-860 MHz. A knob and fine pitch screw allows precise frequency setting. The lockable connector turret rotates to adjust 3db bandwidth of the notch.

Frequency Tuning Range: 470-860 MHz
Notch Loss Adjusts 6-30dB
Notch BW Adjusts 1-30 MHz

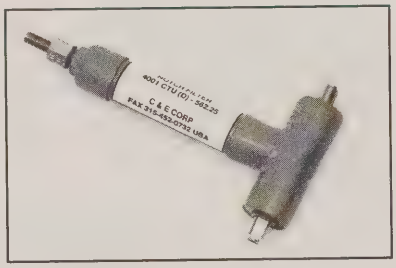
## SHARP CARRIER NOTCHES - CUT-TO-FREQUENCY



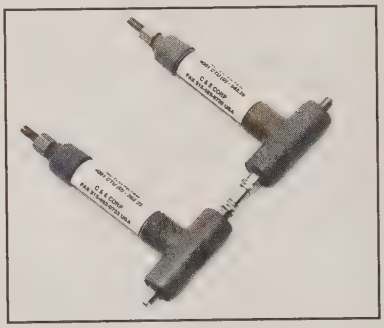
**VHF: 4001CTV**

These 40db notches suppress a video, interference or other unwanted carrier in cable networks or off-air. They are cut to your specified frequency, but are screwdriver adjustable. 3db bandwidth depends on specified notch frequency.

| Notch Frequency | Approx. 3db BW |
|---|---|
| 54-174 | 3 MHz |
| 174-216 | 4 |
| 216-300 | 5 |
| 300-450 | 6 |



**UHF: 4001CTU**



**UHF: 4001CTUD**

These single or double cavity notches are used to suppress an unwanted UHF carrier. They are cut to your specified frequency (470-890 MHZ) and 3db bandwidth (3-24 MHz). They are fine tunable by user.

### Typical Notch 4001CTU

| | Notch (db) | | |
|---|---|---|---|
| BW (MHz) | 470 | 650 | 890 |
| 3 | 13 | 12 | 11 |
| 6 | 18 | 17 | 16 |
| 12 | 23 | 22 | 21 |
| 24 | 29 | 28 | 27 |

**Notch of 4001CTUD is double the numbers shown above.**

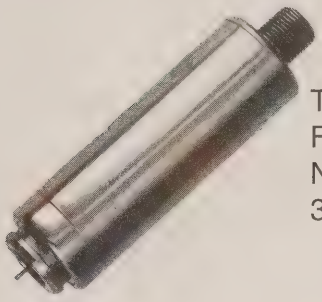
# FILTERS FOR INTERFERENCE SUPPRESSION *(CON'T)*

Connectors F (75 ohms)

## LOW COST NOTCH FILTERS - *CUT TO FREQUENCY*

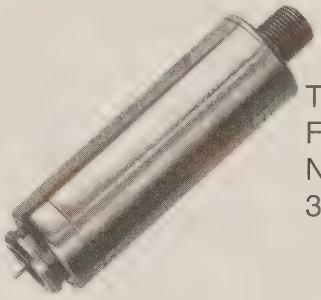
These weatherized notch filters are "cut" to your specified VHF or UHF.
Use them to suppress interference within the CATV or LAN networks or at the antenna to suppress off-air interference.

### VHF



TXSF-(Fo MHz)
Fo Option: 50-300 MHz
Notch Loss >50db
3db BW approx. 3%Fo

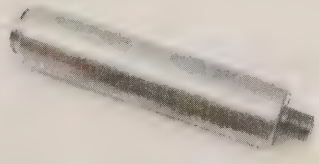
### UHF



TXUH-(Fo MHz)
Fo Option: 470-890 MHz
Notch Loss >20db
3db BW approx. 20 MHz

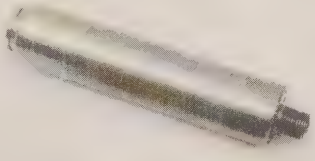
## LOW COST BROADBAND INTERFERENCE SUPPRESSORS

These tubular, weatherized filters are placed at the antenna to suppress bands with many potential off-air interference frequencies. Suppression loss is >50 db typical. Special bands available to order.



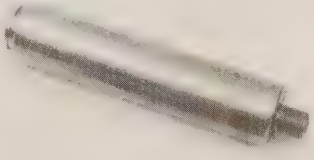
Suppresses Amateur/CB/Paging

TXHP-51/55 highpass passes 55-500 MHz and suppresses 51 MHz & below



Suppresses Midband Radio/Paging

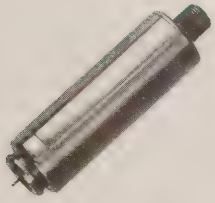
TXBS-120/168 notches midband (120-168 MHz) and passes lo, hi, super, hyperband.



Suppresses Aero/Superband

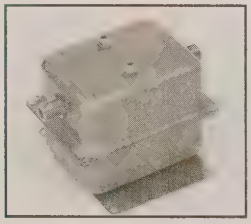
TXLP-216 passes channels 2-13 and suppresses 228 MHz & up.

## FM CARRIER NOTCH FILTERS



TXFM-(Fo MHz)
Weatherized Notch is > 50db & 3db BW is approx 4 MHz. Cut to your specific FM frequency 88-108MHz

## AML PILOT TRAP



CTFM- 88-108MHz option" This 25db sharp notch has 3db BW= 1MHz BW. For example, CTFM-88.1 notches lowest FM with <5 db on Ch 6 aural.

TXPC-73.956 For Hughes AML equipt to notch 73.956 pilot carrier. 35db notch & < 2db +/- 2.20 MHz

# CO-CHANNEL SUPPRESSOR MODEL 3903-( )

## Suppress Off-Air Interference At Same Freequency As Viewed Channel

Co-channel interference occurs when a TV antenna receives transmissions from two broadcast stations transmitting the same channel. Conventional filters cannot suppress this interference without also suppressing the desired program - at the same frequency.

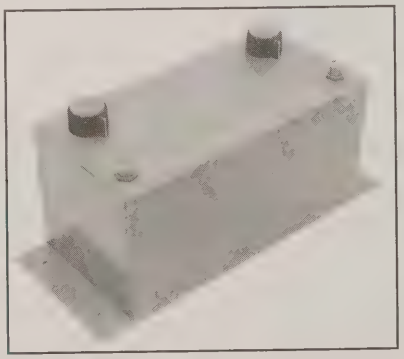
3903 eliminates the undesired channel by phasing it out. 3903 is installed in the line between a test antenna and a directional tap on the downlead of the regular receive antenna. The test antenna is pointed to pick-up a sample of the interference. 3903 adjusts the amplitude and phase of this sample to cancel the interference received via the regular receive antenna. This cancellation takes place at the receiver input. Because the interfering signal has a unique modulation envelope, it will cancel itself without degrading the desired program.

The principal of operation has been validated by extensive use in CATV and other communication head ends for over 25 years. 3903 is effective in suppressing any interference which lies within or near the TV channel bandwidth such as:

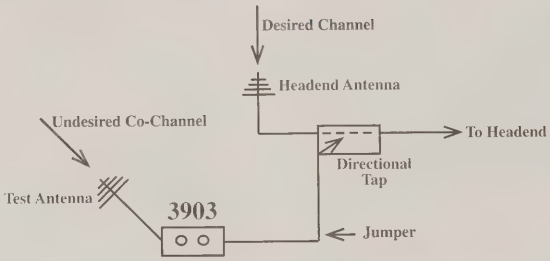
- Wideband noise - due to arching power lines, rotating machinery, neon lights, etc.
- Ghosting (offset, double images)
- Transmitter harmonics
- FM degradation due to strong adjacent FM channel
- Interference to radio receiver due to co-located transmitter

3903 is available for any frequency 50-213 MHz, including FM (88-108 MHz). It is also available to special order to 1000 MHz. Order it as 3903-( ) by inserting the TV channel affected or FM or other frequency to be suppressed.

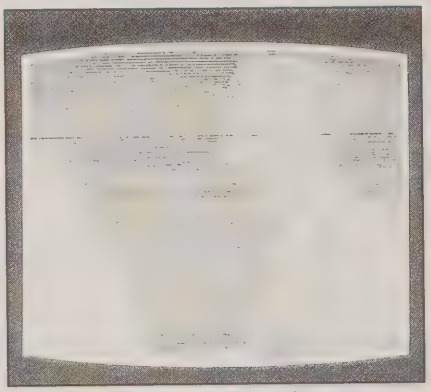
Illustrated operating instructions are provided with each shipment, which lists our technical assistance contact number.



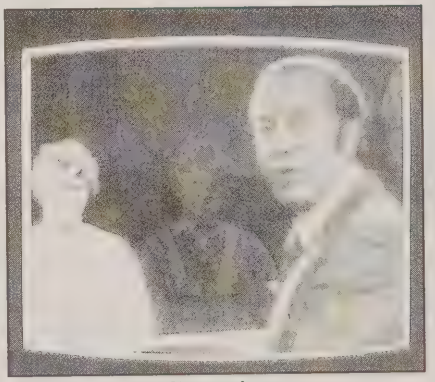
3903 Co-Channel Suppressor




Hook-Up Diagram For 3903 Co-Channel Canceller



Co-Channel Interference



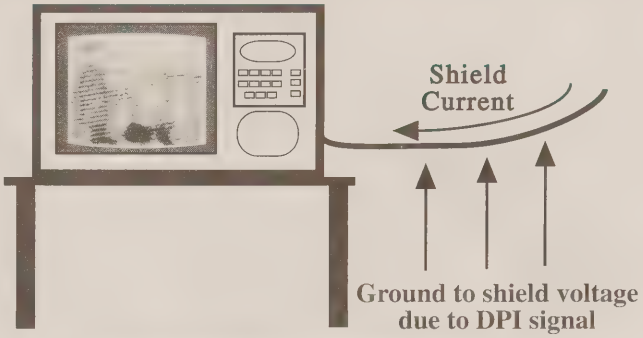
Ghosting

Wideband Electrical Noise

# DPI ELIMINATOR - MODEL DPI-100

**Protects Cable Ready TV Sets From Direct Pick-Up[ Interference (DPI)**

**CAUSED BY OFF-AIR BROADCAST, PAGERS, CB, HAM, HARMONICS, FM, POWER LINES**



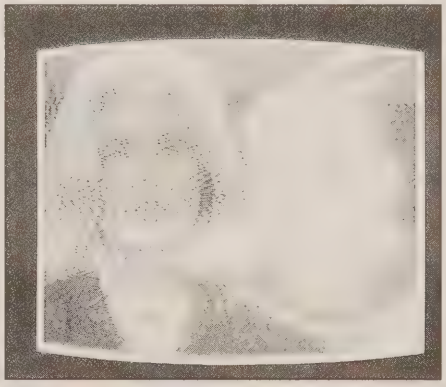

Model DPI-100 inserts in the TV drop cable. It blocks the DPI riding in on the outer shield. Otherwise, the DPI signal rides the shield into the TV's RF circuitry. DPI attacks cable ready TV sets - those not using a set-top converter.

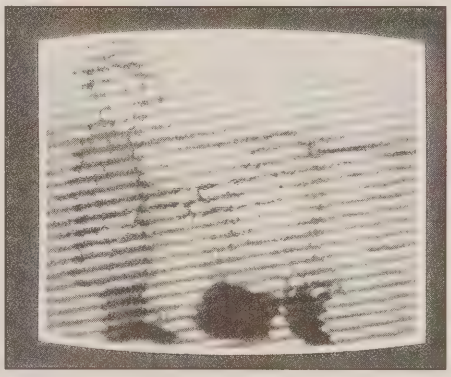
Acting as an antenna, the coax shield conducts the unwanted signal into the TV set where it mixes with the regular TV signal which arrives INSIDE the coaxial cable from the CATV head end.

DPI can occur in environments with high levels of off-air signals such as:

- ✤ Same TV channel broadcast
- ✤ FM Broadcasts
- ✤ Radio paging signals
- ✤ Ham or CB Radio transmissions
- ✤ Police or commercial mobile radio

According to a recent study of such locations, objectionable DPI can be expected to occur on approximately 25% of cable ready sets in the vicinity.***





The symptoms are diverse and include:

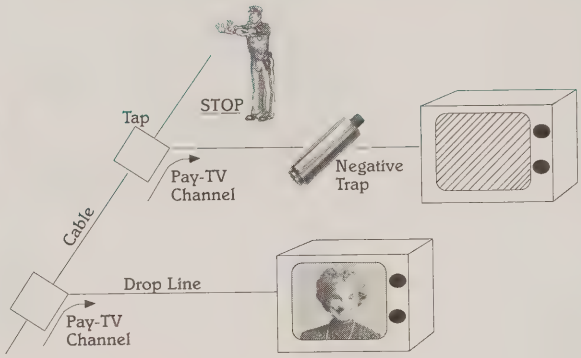
- ✤ Herringbone lines on picture
- ✤ "Venetian blinds" - horizontal lines
- ✤ "Snowy spots"
- ✤ Wavy lines on picture

Solve your subscriber's problem quickly.
Use DPI-100: *it's easy to install and it works!*

**DPI-100 installs easily using jumpers supplied.**

***By --Joseph L. Stern*
*"Direct Pick-Up Interference in a world without converters", COMMUNICATIONS TECHNOLOGY, July 1993.*

# NEGATIVE TRAPPING FOR CHANNEL SECURITY IN BROADBAND CABLE SYSTEMS




- CATV
- MATV
- SMATV Systems
- Hospitals & Nursing Homes
- Industrial Video Systems
- Local Area Networks
- Hotels, Apartments, Motels,
- Schools & other Institutions.

## DEFINITION OF NEGATIVE TRAPPING

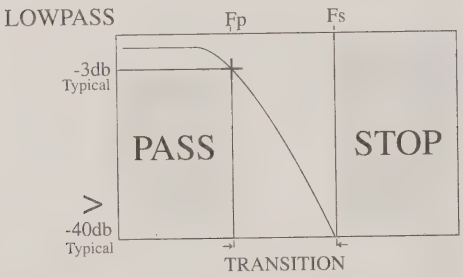
A negative trap blocks the picture carrier of the selected channel to deny the viewer premium TV entertainment or confidential information. Negative trapping was the first and remains the simplest video channel security system. It may be applied quickly to any system simply by installing the trap in the viewer's cable. Negative traps are often located outside in locations not readily accessible to subscribers. Therefore, they are weatherized: moisture sealed and temperature stable.

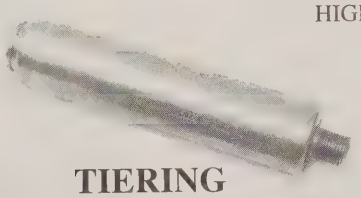
## BEST CHANNELS TO TRAP

The bandwidth of a negative trap is proportional to its notch frequency: as we trap at higher and higher channels, the increasing bandwidth of the trap begins to impact the sound carrier of the lower adjacent channel and at some point, the lower adjacent channel is not usable. At even higher channels, the upper adjacent channel also is not usable. Therefore, given a choice, the "best" channel to trap is the lowest channel or the one with no adjacent channels in service.

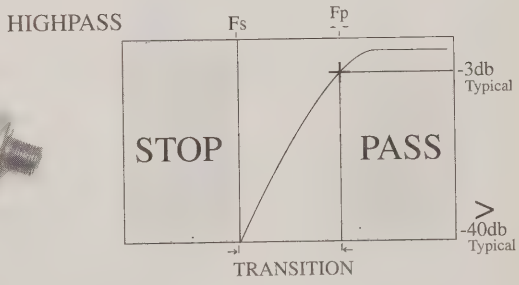
## TRAPPING MULTIPLE CHANNELS

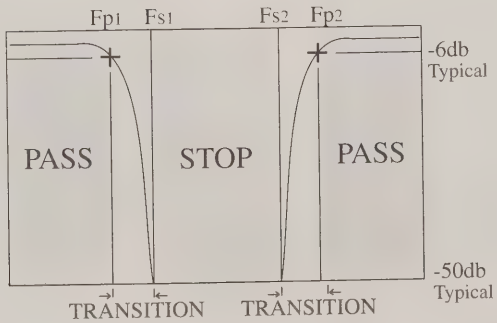
When several non-contiguous channels are to be secured, the appropriate negative traps may be installed in series- see page 13. When several contiguous channels are to be trapped, tiering traps (pages 14-15) are used: they are more compact and cost effective than a series of negative traps.



**TIERING TRAP**

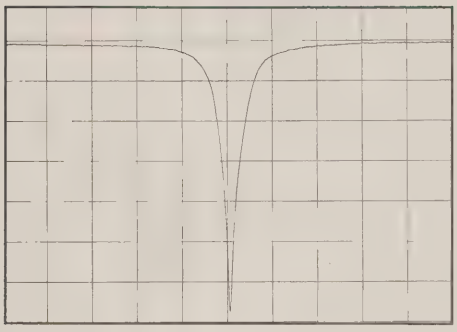


# NEGATIVE TRAPS - MULTIPLE TRAPS - VIDEO/SOUND TRAPS

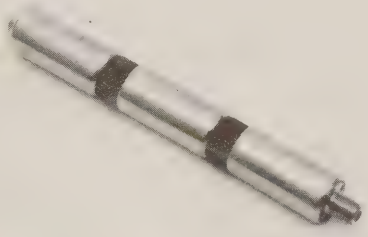
Connectors: Type F (male/female pair) 75 ohms
Available to NTSC, PAL & SECAM Channel formats
Available IRC, HRC, Inverted or Offset formats

## NEGATIVE TRAPS




## MULTIPLE, NEGATIVE TRAPS

We can provide an assembly of any number of negative traps, permanently joined with inter-trap joints weatherized. On special order, we can ship these assemblies encased in a secure metal tube.. *(Note: where channels are contiguous, see Tiering Traps, described on pages 14-15 for a more cost effective solution.)*



## SOUND TRAPS

**TXCS - (Channel)**
These traps have the same response as negative traps (above), but are tuned to the channel sound frequency.

## Typical Trap Performance

Exact trap performance will depend on which channel is being trapped, signal strength, TV set sensitivity and other system parameters. However, the table below has been found a useful guide to performance of standard traps for the purpose of selecting the pay-TV channel from among those available.

| Trapped Channel | Channel Audio | Lower Audio | Upper Video |
|---|---|---|---|
| 2-9 | Faint | Good | Good |
| 10-32 | Gone | OK | Good |
| 33-36 | Gone | Noisy | Good |
| 37-44 | Gone | Faint | Good |
| 45-53 | Gone | Faint | Watchable |

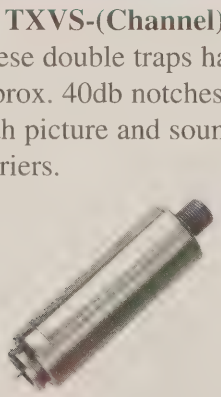
## Specifications

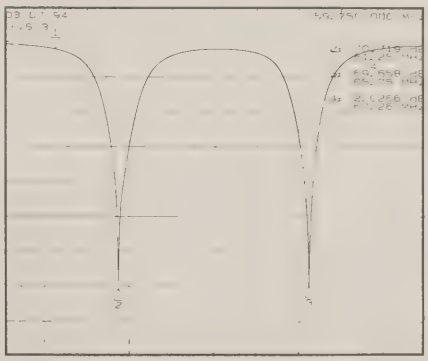
| | |
|---|---|
| Channels Available: | 2-36* (37-50 Special) |
| Connectors: | F (male/female) |
| Impedance: | 75 Ohms |
| Body Diameter: | .820" |
| Body Length: | Give range to cover different brands. |
| Video Notch Loss: | 60 dB Min. |

*Inquire for higher frequency channels.

## COMBINATION VIDEO/AUDIO TRAPS

**TXVS-(Channel)**
These double traps have approx. 40db notches on both picture and sound carriers.

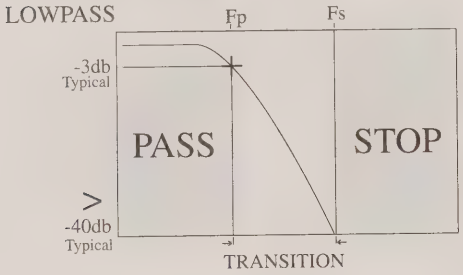




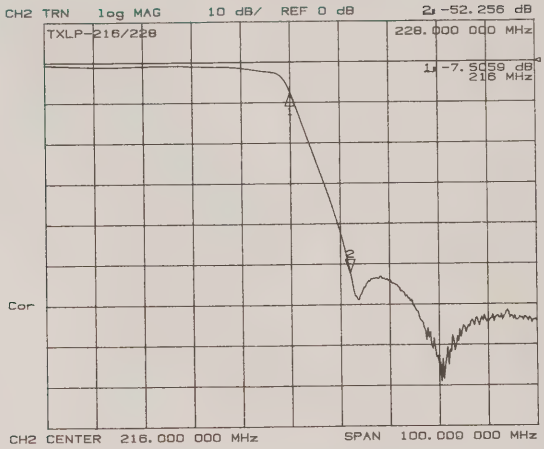
**TXVS- 3**

# LOWPASS TIERING TRAPS

**TXLP-Fp/Fsp**
Fp = top of passband (MHz)
Fs = bottom of stopband (MHz)




If one of our STANDARDS won't do, we can make your SPECIAL at same price plus a nominal one time set-up charge, if transition is at least 8% of Fp. (See price list for details)

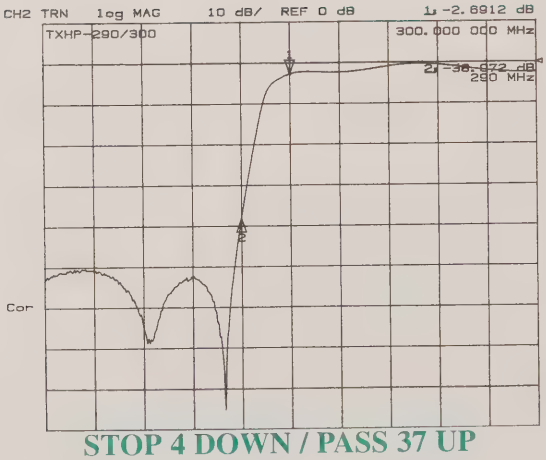



**PASS 2-13 / STOP 25 UP**

**STANDARD LOWPASS TRAPS**

| Mode | Pass (MHz) | Stop (MHz) |
|---|---|---|
| TXLP-50/55 | 0 - 50.50 | 55.25 - 450 |
| TXLP-72/77 | 0 - 71.75 | 77.25 - 450 |
| TXLP-88/95 | 0 - 87.75 | 95.00 - 450 |
| TXLP-108/115 | 0 - 108.00 | 115.00 - 450 |
| TXLP-216/228 | 0 - 215.75 | 229.25 - 450 |
| TXLP-300/320 | 0 - 299.75 | 319.25 - 450 |
| | **Fp** | **Fs** |

# HIGHPASS TIERING TRAPS

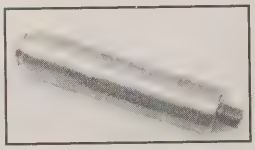


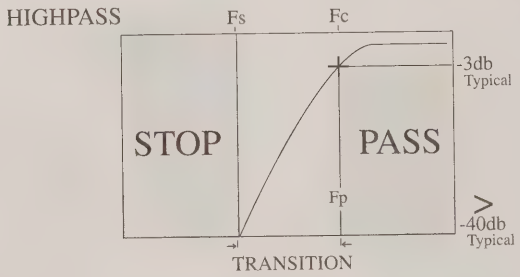

**STOP 4 DOWN / PASS 37 UP**

**STANDARD HIGHPASS TRAPS**

| Model# | Stop (MHz) | Pass (MHz) |
|---|---|---|
| TXHP-51/5 | 0 - 51.00 | 55.00 - 450 |
| TXHP-72/77 | 0 - 71.75 | 77.25 - 450 |
| TXHP-80/88 | 0 - 80.00 | 88.00 - 450 |
| TXHP-167/175 | 0 - 167.00 | 175.25 - 450 |
| TXHP-200/216 | 0 - 200.00 | 217.25 - 450 |
| TXHP-290/300 | 0 - 285.00 | 301.25 - 450 |
| | **Fs** | **Fp** |

**TXHP-Fs/Fp**
Fs = top of stopband (MHz)
Fp = bottom of passband (MHz)

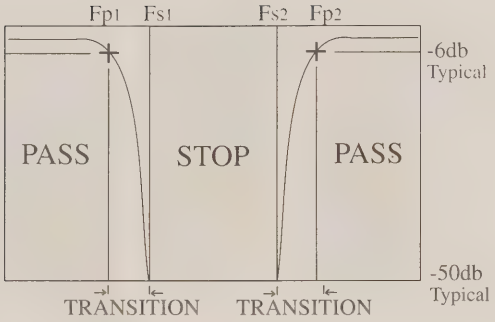




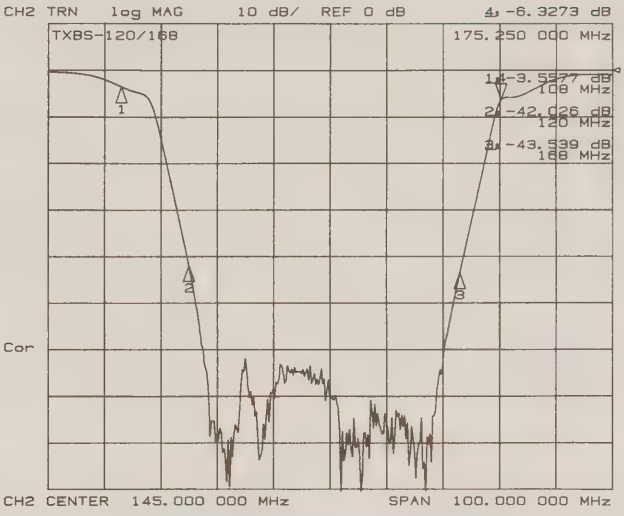

If one of our STANDARDS won't do, we can make your SPECIAL at the same price plus a nominal,one time set up charge, if transition is at least 8% of Fp. (See price list for details)

# BANDSTOP TIERING TRAPS

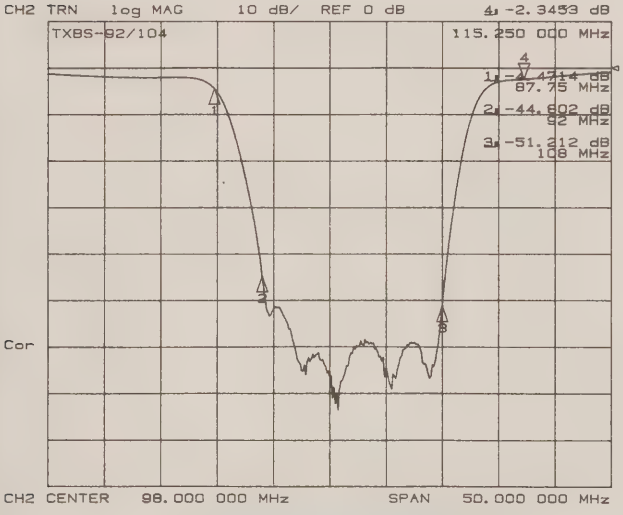
**TXBS-Fs1/Fs2**
Fs1 = lowest trapped frequency MHz
Fs2 = highest trapped frequency MHz
Fp1 = lower Passband Edge MHz
Fp2 = upper Passband Edge MHz




If one of our STANDARDS won't do, we can make your SPECIAL at same price plus a nominal one time set-up charge, if transition is at least 8% of Fp. (See price list for details) We will be glad to quote price on your specials with smaller transitions or other non-standard features.

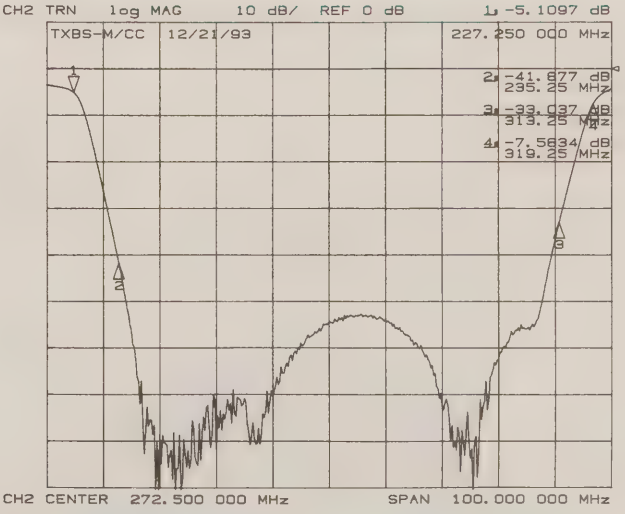



MIDBAND TRAP (14-21)




FM BAND TRAP

*Need help in SPECIFYING your CUSTOM TRAP? Call us and we'll do it for you!*




SUPER-HYPERBAND TRAP (26-39)

## STANDARD BANDSTOP TRAPS

| Model# | Passband Edges | | Stopband Edges | |
|---|---|---|---|---|
| | Fp1 | Fp2 | Fs1 | Fs2 |
| TXBS-76/88 | 71.75 | 97.00 | 77.25 | 87.75 |
| TXBS-92/104 | 87.75 | 110.00 | 92.00 | 104.00 |
| TXBS-120/162 | 108.00 | 175.25 | 121.25 | 161.75 |
| TXBS-120/168 | 108.00 | 175.25 | 121.25 | 168.00 |
| TXBS-S13/S20 | 236.75 | 311.25 | 245.25 | 299.75 |

*Affordable -*

# ZAP & TRAP™**

## Positive Pay-TV Security System

The positive security system is simple: an encoder (like our "ZAPPER") inserts a scrambling tone at the head end and a decoding (Positive) trap removes the tone at the authorized TV set. So trap cost is proportional to revenue. Scrambling may be inserted into the modulator IF loop, with the "IF ZAPPER," or at the modulator output with the "RF ZAPPER." Best results are achieved with **ZAP & TRAP™** for channels below 220 MHz. At higher frequencies, the wider bandwidth of conventional L/C traps attenuates video and may result in "grainy" pictures. Good video quality can often be restored with a video enhancer. For industrial applications, where there are only a few authorized sets such as executive offices and conference rooms, we can supply special cavity decoding traps which will produce good decoded video even for UHF channels.

### ZAPPER Specifications

**IF ZAPPERS (Insert in IF Loop):**
(US) Model 900-43.50 (43.50 MHz)
(PAL) Model 900-36.15 (36.15 MHZ)

**RF ZAPPPERS (Insert after Modulator):**
Model 900-(Channel)
(Any US or PAL channel 50-220 MHz)

**RF Power Out:**
Adjustable 50-70dBmv

**AC Power:**
Current rating is 3 amps
Specify 115 or 230VAC
(Internal jumper selects 115 or 230-We will ship with jumper set to your specification)

**AC Connector & Power Cord:**
Chassis has universal jack IEC-320. We supply power cord mating this universal jack with North American 3-prong plug at other end. We can substitute the North American plug with plug required in any other country. Please specify exact plug type. For United Kingdom plug add $18.00 to ZAPPER price.

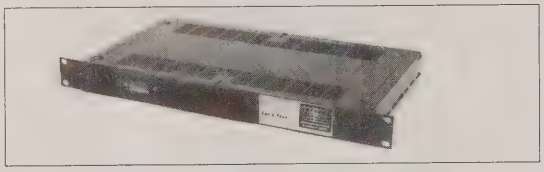
The ZAPPER (scrambler) Model 900

| COUNTRY | AC CABLE | PLUGS |
|---|---|---|
| Continental Europe CEE7 | A | |
| Australia | C | |
| United Kingdom | D | |
| Denmark | E | |
| France/Belgium | F | |
| India (Old. Brit.) | G | |
| Israel | H | |
| Italy | I | |
| Japan | J | |
| Switzerland | L | |

### Video Enhancer #950

Enhances picture blur & color fade caused by trap decoding of high frequency channels.

Input Connector: RCA 75 Ohm (1.0 V P-P)
Output Connector: RCA 75 Ohm
Power Connector: IEC320
(Same 115/230VAC power cord options as for encoders)
Current Rating: 3 Amps
Luminance Level: -40dB to +6dB
Color Level: -35dB to +6dB
Tint Level: +/- 36 degrees
Channel Format: NTSC
(Inquire for other formats)

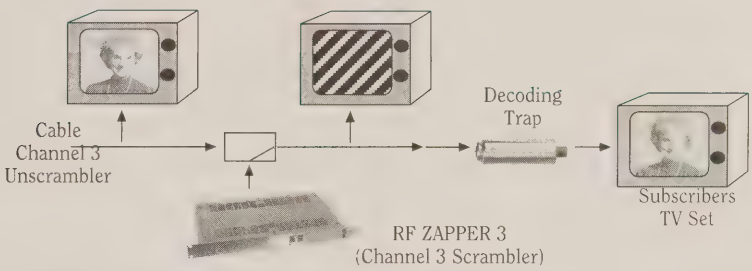


Video Enhancer Model 950

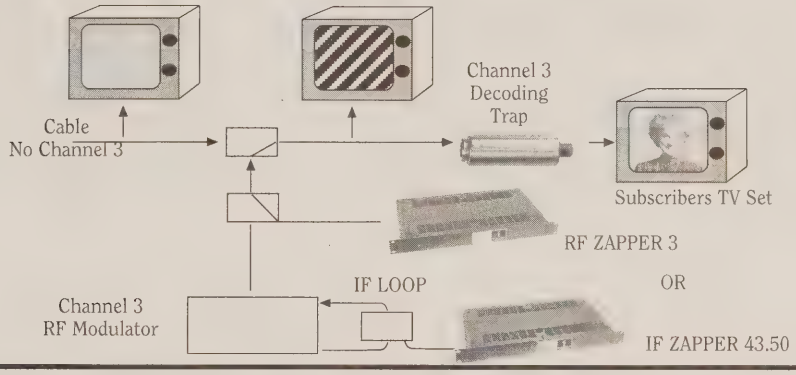
***ZAP & TRAP is a trademark of:***
**COMMUNICATIONS & ENERGY CORP.**

# Some ZAP & TRAP*™ Applications

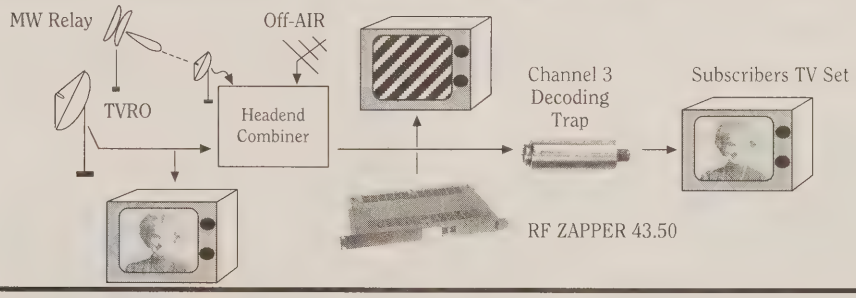
**SCRAMBLING AN ON-LINE CHANNEL**



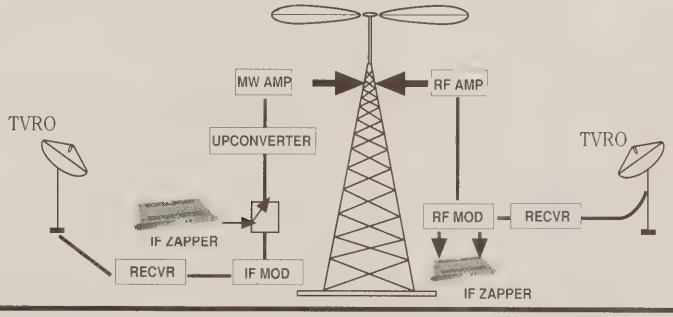

**INSERTING A SCRAMBLED CHANNEL ON-LINE**




**SCRAMBLING AT THE HEADEND**




**MMDS**




**LPTV**

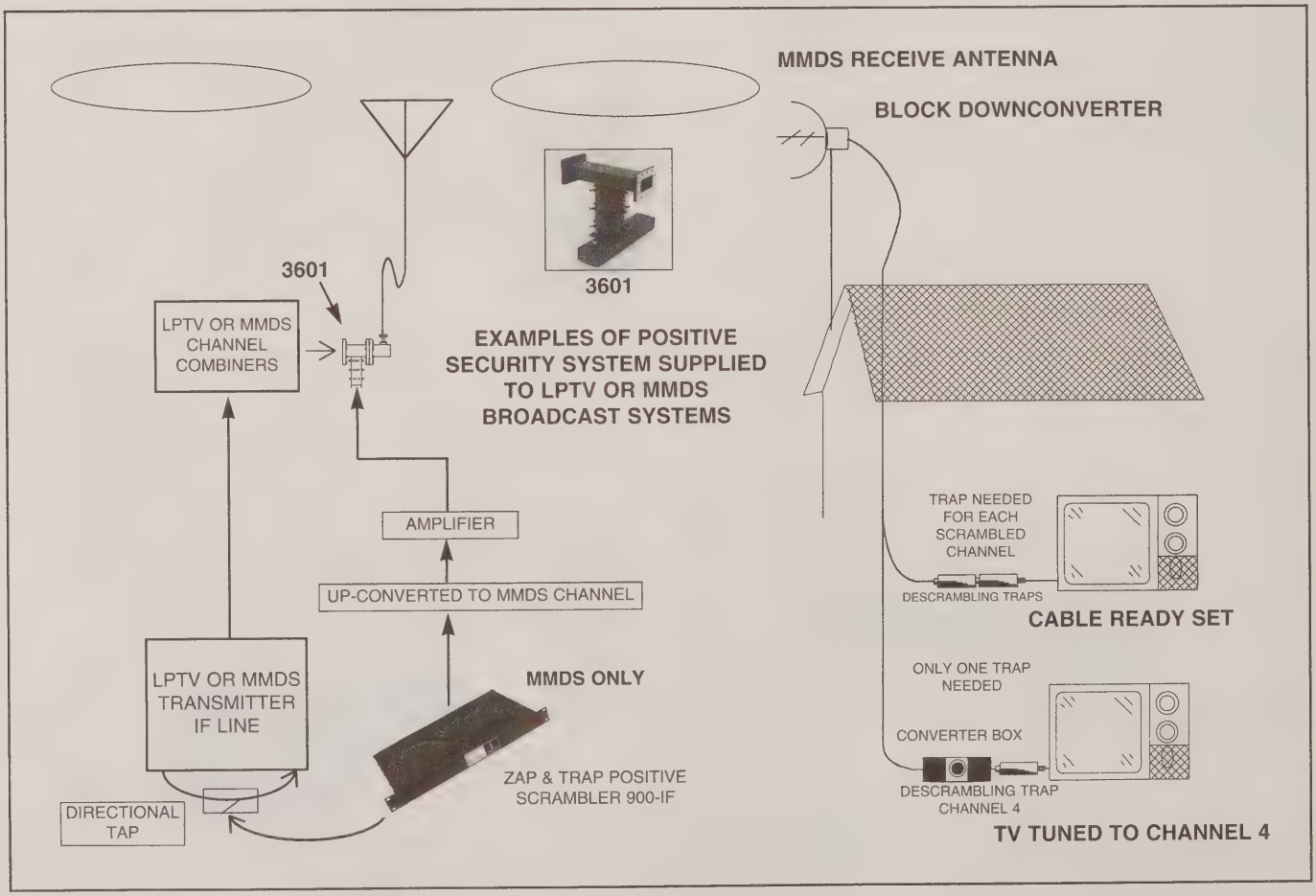
*For details of LPTV/MMDS Scrambling, See page 18*

# POSITIVE SECURITY IN MICROWAVE TV (MMDS): AND LOW POWER TV BROADCAST (LPTV)

Many operators associate positive only with CATV systems. It is also applicable to MMDS & LPTV.

ZAP & TRAP can scramble the MMDS or LPTV broadcast signal in one of two ways. The most economical way is to use a ZAP & TRAP IF encoder (such as 900IF-43.5) to insert the scrambling signal into the transmitter's IF loop. Addition of the scrambling signal increases the load on the transmitter's final amplifier. So, this method is feasible only if the amplifier is rated for twice the channel output power. For example, if authorized channel power is 50 watts, the amplifier should be able to handle 100 watts without overload and possible output distortion. In the second method, the IF scrambler output is upconverted to the MMDS channel, amplified and inserted into the antenna line after the channel transmitter. This method avoids transmitter overload and spurious frequency generation, but requires more equipment.

At the subscriber, decoding traps are placed at the TV sets. Where a set top converter is used, a single trap on the exit channel (3, for example) will decode all scrambling channels without significantly affecting unscrambled channels. Where there is no converter, then multiple decoding traps are used - one for each scrambled channel.



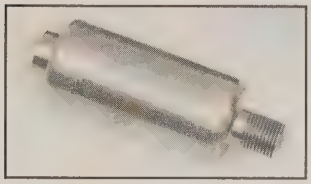
# DECODING THE POSITIVE SCRAMBLED CHANNEL

## LIFTING THE FREQUENCY LIMIT

Positive Scrambling is among the oldest pay-TV security systems in CATV. It continues to provide adequate, cost-effective security for small systems, start-up pay-TV operations and others with limited security budgets.

Positive encoding has no upper frequency limit: this is set by the availability of an appropriate trap or other decoder.

C&E's decoder development program seeks to provide a solution for any situation where the cost effective positive security system can be applied, including CATV, LPTV, MMDS, etc.

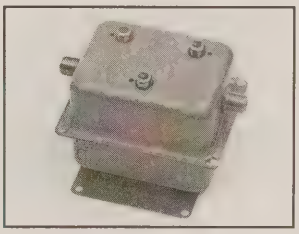


**Model TXPT-(Channel#)**
***is available for channels 50-222 MHz for international channel formats.***

## TO CHANNEL K (222 MHZ)

Up to about 222 MHz (US channel K) conventional L/C tubular positive decoding traps (such as TXPT-CH# ) usually recover acceptable video. Grainy video of higher channels is due to the increased bandwidth of the traps. This can sometimes be improved by our video enhancer Model #950.

**Model 4001PTS-(Channel#)**
***is available for channels 222-450 MHz.***

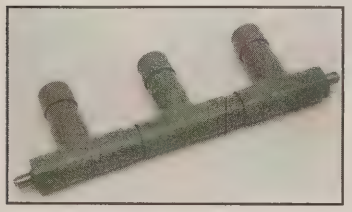


## TO CHANNEL YY (450 MHZ)

C&E's 4001PTS - Special Positive Traps usually recover acceptable video quality 222-450 MHZ.
These more expensive traps are cost effective in an industrial setting and in other special situations.

## UHF POSITIVE DECODING TRAPS

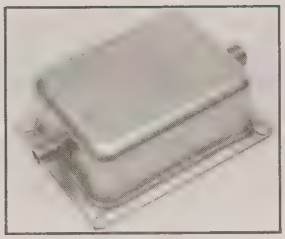
At UHF (470-806 MHz), the mandatory narrow 3dB bandwidth (<5 MHz) requires cavity filters such as the C&E 4001PTU series. These are applicable to British UHF CATV pay-TV systems using positive scrambling or to UHF LPTV stations broadcasting premium programming.



**Cavity notch filter model 4001PTU** ***decodes a UHF positive scrambled channel.***

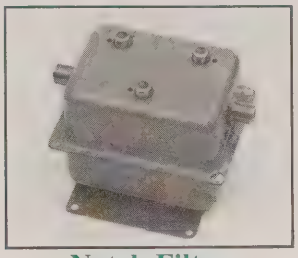
# TERRESTRIAL INTERFERENCE FILTERS FOR PROFESSIONAL TVRO

## FILTERS FOR BASEBAND (0-15 MHZ)



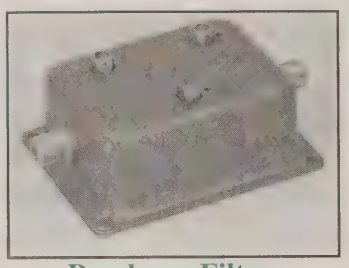
### Low Pass Filter

**4001LP5** passes 0-4.2 MHz <1dB with >35db loss to unwanted carriers >7 MHz.



### Notch Filter

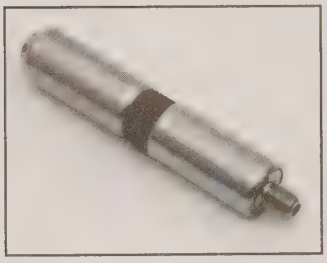
**4001BCT-(Fo)** has 25db notch at specified frequency 5-15MHz. 3dB BW <1 MHz.



### Bandpass Filter

**4001BPV-(Fo)** <2db at your specified frequency 4-15 MHz and >20dB at +/-1 MHz.

## FILTERS FOR SECOND IF (70-300 MHZ)

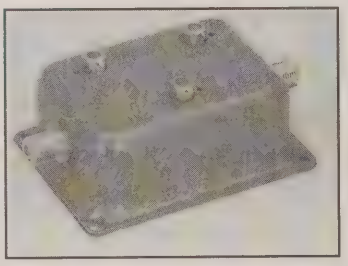


### Double Trap for IF Loop

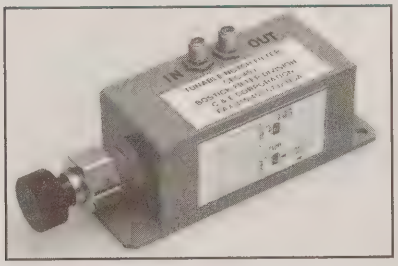
**TXTI-(IF MHz)** contain 2 traps: at +/-10 MHz from IF center frequency. Suppresses downconverted TI signals. Specify center frequency IF 50-300 MHz.

### Receiver IF Bandpass Filter

**4001BP-(IF MHz) (BW MHz)** is available in full or half-transponder bandwidths - 28 or 14 MHz, respectively. Insert bandwidth desired and IF center frequency.



## TUNABLE TI NOTCHES FOR IF BLOCK DOWNCONVERTER (950-1450 MHZ)

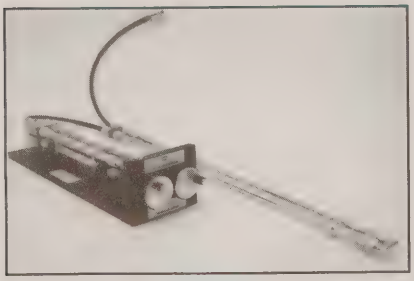



Type **CEC-459** notch filters tune the entire block band to notch a TI carrier with a combination of fast, coarse tuning and fine tuning controls. Available as single carrier unit CEC-459 or in assemblies of up to 6 units available to notch out multiple carriers: CEC-459-2, -3, -4, -5, or -6.

### Tunable Notch Filters

**CEC-459** tunes 950-1450 MHz

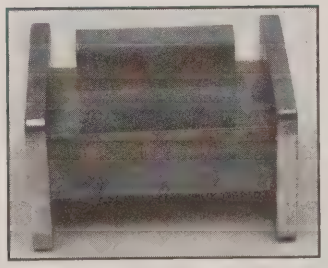
## DIGITAL INTERFERENCE SUPPRESSSOR



C3903
L3903

Adjusts TI phase, amplitude & delay to cancel itself where interference is wide-band (digital) and notch filters are ineffective. **C3903** connects between a TI-seeking antenna and the TVRO's 3.7-4.2 GHz line. **L3903** (950-1450 MHz) cancels wide-band TI in the block downconvert band.

## PRE-LNB ANTI-RADAR BANDPASS



**CEC-458** mounts between feedhorn and LNB to suppress coastal radar & airport microwave altimeter with only 1dB loss 3.7-4.2 GHz

Stopband Loss:
25dB: 3.65 & 4.25 GHz
50dB: 3.55 & 4.35 GHz
60dB: 3.50 & 4.40 GHz

# Appendix II - TV Channel Frequencies

## US & Canada

| CHAN | | BW(MHZ) | PIX | COLOR | SOUND |
|---|---|---|---|---|---|
| **SUB-BAND** | | | | | |
| T-7 | | 5.75-11.75 | 7.00 | 10.58 | 11.50 |
| T-8 | | 11.75-17.75 | 13.00 | 16.58 | 17.50 |
| T-9 | | 17.75-23.75 | 19.00 | 22.58 | 23.50 |
| T-10 | | 23.75-29.75 | 25.00 | 28.58 | 29.50 |
| T-11 | | 29.75-35.75 | 31.00 | 34.58 | 35.50 |
| T-13 | | 41.75-47.75 | 43.00 | 46.58 | 47.50 |
| **VHF-LOW BAND** | | | | | |
| TVIF | | 41-47 | 45.75 | 42.17 | 41.25 |
| 2 | | 54-60 | 55.25 | 58.83 | 59.75 |
| 3 | | 60-66 | 61.25 | 64.83 | 65.75 |
| 4 | | 66-72 | 67.25 | 70.83 | 71.75 |
| 5 | | 76-82 | 77.25 | 80.83 | 81.75 |
| 6 | | 82-88 | 83.25 | 86.83 | 87.75 |
| **FM (PSEUDO)*** | | | | | |
| FM-1 | | 88-94 | 89.25 | 92.83 | 93.75 |
| FM-2 | | 94-100 | 95.25 | 98.83 | 99.75 |
| FM-3 | | 100-106 | 101.25 | 104.83 | 105.75 |
| **VHF-MID BAND** | | | | | |
| A-2 | | 108-114 | 109.25 | 112.83 | 113.75 |
| A-1 | | 114-120 | 115.25 | 118.83 | 119.75 |
| A(14) | 120-126 | 121.25 | 124.83 | 125.75 | |
| B | (15) | 126-132 | 127.25 | 130.83 | 131.75 |
| C | (16) | 132-138 | 133.25 | 136.83 | 137.75 |
| D | (17) | 138-144 | 139.25 | 142.83 | 143.75 |
| E | (18) | 144-150 | 145.25 | 148.83 | 149.75 |
| F | (19) | 150-156 | 151.25 | 154.83 | 155.75 |
| G | (20) | 156-162 | 157.25 | 160.83 | 161.75 |
| H | (21) | 162-168 | 163.25 | 166.83 | 167.75 |
| I | (22) | 168-174 | 169.25 | 172.83 | 173.75 |
| **VHF-HIGH BAND** | | | | | |
| 7 | | 174-180 | 175.25 | 178.83 | 179.75 |
| 8 | | 180-186 | 181.25 | 184.83 | 185.75 |
| 9 | | 186-192 | 187.25 | 190.83 | 191.75 |
| 10 | | 192-198 | 193.25 | 196.83 | 197.75 |
| 11 | | 198-204 | 199.25 | 202.83 | 203.75 |
| 12 | | 204-210 | 205.25 | 208.83 | 209.75 |
| 13 | | 210-216 | 211.25 | 214.83 | 215.75 |
| **VHF-SUPER BAND** | | | | | |
| J | (23) | 216-222 | 217.25 | 220.83 | 221.75 |
| K | (24) | 222-228 | 223.25 | 226.83 | 227.75 |
| L | (25) | 228-234 | 229.25 | 232.83 | 233.75 |
| M(26) | 234-240 | 235.25 | 238.83 | 239.75 | |
| N | (27) | 240-246 | 241.25 | 244.83 | 245.75 |
| O | (28) | 246-252 | 247.25 | 250.83 | 251.75 |
| P | (29) | 252-258 | 253.25 | 256.83 | 257.75 |
| Q | (30) | 258-264 | 259.25 | 262.83 | 263.75 |
| R | (31) | 264-270 | 265.25 | 268.83 | 269.75 |
| S | (32) | 270-276 | 271.25 | 274.83 | 275.75 |
| T | (33) | 276-282 | 277.25 | 280.83 | 281.75 |
| U | (34) | 282-288 | 283.25 | 286.83 | 287.75 |
| V(35) | 288-294 | 289.25 | 292.83 | 293.75 | |
| W(36) | 294-300 | 295.25 | 298.83 | 299.75 | |
| **HYPERBAND** | | | | | |
| AA | (37) | 300-306 | 301.25 | 304.83 | 305.75 |
| BB | (38) | 306-312 | 307.25 | 310.83 | 311.75 |
| CC | (39) | 312-318 | 313.25 | 316.83 | 317.75 |
| DD | (40) | 318-324 | 319.25 | 322.83 | 323.75 |
| EE | (41) | 324-330 | 325.25 | 328.83 | 329.75 |
| FF | (42) | 330-336 | 331.25 | 334.83 | 335.75 |
| GG | (43) | 336-342 | 337.25 | 340.83 | 341.75 |
| HH | (44) | 342-348 | 343.25 | 346.83 | 347.75 |
| II(45) | 348-354 | 349.25 | 352.83 | 353.75 | |
| JJ | (46) | 354-360 | 355.25 | 358.83 | 359.75 |
| KK | (47) | 360-366 | 361.25 | 364.83 | 365.75 |
| LL | (48) | 366-372 | 367.25 | 370.83 | 371.75 |
| MM | (49) | 372-378 | 373.25 | 376.83 | 377.75 |
| NN | (50) | 378-384 | 379.25 | 382.83 | 383.75 |
| OO | (51) | 384-390 | 385.25 | 288.83 | 389.75 |
| PP | (52) | 390-396 | 391.25 | 394.83 | 395.75 |
| QQ | (53) | 396-402 | 397.25 | 400.83 | 401.75 |
| RR | (54) | 402-408 | 403.25 | 406.83 | 407.75 |
| SS | (55) | 408-414 | 408.25 | 412.83 | 413.75 |
| TT | (56) | 414-420 | 415.25 | 418.83 | 419.75 |

## US & Canada (con't)

| CHAN | | BW(MHZ) | PIX | COLOR | SOUND |
|---|---|---|---|---|---|
| UU | (57) | 420-426 | 421.25 | 424.83 | 425.75 |
| VV | (58) | 426-432 | 427.25 | 430.83 | 431.75 |
| WW | (59) | 432-438 | 433.25 | 436.83 | 437.75 |
| XX | (60) | 438-444 | 439.25 | 442.83 | 443.75 |
| YY | (61) | 444-450 | 445.25 | 448.83 | 449.75 |
| ZZ | (62) | 450-456 | 451.25 | 454.83 | 455.75 |
| AAA | (63) | 456-462 | 457.25 | 460.83 | 461.75 |
| BBB | (64) | 462-468 | 463.25 | 466.83 | 467.75 |
| CCC | (65) | 468-474 | 469.25 | 472.83 | 473.75 |
| DDD | (66) | 474-480 | 475.25 | 478.83 | 479.75 |
| EEE | (67) | 480-486 | 481.25 | 484.83 | 485.75 |
| FFF | (68) | 486-492 | 487.25 | 490.83 | 491.75 |
| GGG | (69) | 492-498 | 493.25 | 496.83 | 497.75 |
| HHH | (70) | 498-504 | 499.25 | 502.83 | 503.75 |
| III | (71) | 504-510 | 505.25 | 508.83 | 509.75 |
| JJJ | (72) | 510-516 | 511.25 | 514.83 | 515.75 |
| KKK | (73) | 516-522 | 517.25 | 520.83 | 521.75 |
| LLL | (74) | 552-528 | 523.25 | 526.83 | 557.75 |
| MMM | (75) | 528-534 | 529.25 | 532.83 | 533.75 |
| NNN | (76) | 534-540 | 535.25 | 538.83 | 539.75 |
| OOO | (77) | 540-546 | 541.25 | 544.83 | 545.75 |
| PPP | (78) | 546-552 | 547.25 | 550.83 | 551.75 |
| QQQ | (79) | 552-558 | 553.25 | 556.83 | 557.75 |
| RRR | (80) | 558-564 | 559.25 | 562.83 | 563.75 |
| **UHF** | | | | | |
| 14 | | 470-476 | 471.25 | 474.83 | 475.75 |
| 15 | | 476-482 | 477.25 | 480.83 | 481.75 |
| 16 | | 482-488 | 483.25 | 486.83 | 487.75 |
| 17 | | 488-494 | 489.25 | 492.83 | 493.75 |
| 18 | | 494-500 | 495.25 | 498.83 | 499.75 |
| 19 | | 500-506 | 501.25 | 504.83 | 505.75 |
| 20 | | 506-512 | 507.25 | 510.83 | 511.75 |
| 21 | | 512-518 | 513.25 | 516.83 | 517.75 |
| 22 | | 518-524 | 519.25 | 522.83 | 523.75 |
| 23 | | 524-530 | 525.25 | 528.83 | 529.75 |
| 24 | | 530-536 | 531.25 | 534.83 | 535.75 |
| 25 | | 536-542 | 537.25 | 540.83 | 541.75 |
| 26 | | 542-548 | 543.25 | 546.83 | 547.75 |
| 27 | | 548-554 | 549.25 | 552.83 | 553.75 |
| 28 | | 554-560 | 555.25 | 558.83 | 559.75 |
| 29 | | 560-566 | 561.25 | 564.83 | 565.75 |
| 30 | | 566-572 | 567.25 | 570.83 | 571.75 |
| 31 | | 572-578 | 573.25 | 576.83 | 577.75 |
| 32 | | 578-584 | 579.25 | 582.83 | 583.75 |
| 33 | | 584-590 | 585.25 | 588.83 | 589.75 |
| 34 | | 590-596 | 591.25 | 594.83 | 595.75 |
| 35 | | 596-602 | 597.25 | 600.86 | 601.75 |
| 36 | | 602-608 | 603.25 | 606.83 | 607.75 |
| 37 | | 608-614 | 609.25 | 612.83 | 613.75 |
| 38 | | 614-620 | 615.25 | 618.83 | 619.75 |
| 39 | | 620-626 | 621.25 | 624.83 | 625.75 |
| 40 | | 626-632 | 627.25 | 630.83 | 631.75 |
| 41 | | 632-638 | 633.25 | 636.83 | 637.75 |
| 42 | | 638-644 | 639.25 | 642.83 | 643.75 |
| 43 | | 644-650 | 645.25 | 648.83 | 649.75 |
| 44 | | 650-656 | 651.25 | 654.83 | 655.75 |
| 45 | | 656-662 | 657.25 | 660.83 | 661.75 |
| 46 | | 662-668 | 663.25 | 666.83 | 667.75 |
| 47 | | 668-674 | 669.25 | 672.83 | 673.75 |
| 48 | | 674-680 | 675.25 | 678.83 | 679.75 |
| 49 | | 680-686 | 681.25 | 684.83 | 685.75 |
| 50 | | 686-692 | 687.25 | 690.83 | 691.75 |
| 51 | | 692-698 | 693.25 | 696.83 | 697.75 |
| 52 | | 698-704 | 699.25 | 702.83 | 703.75 |
| 53 | | 704-710 | 705.25 | 708.83 | 709.75 |
| 54 | | 710-716 | 711.25 | 714.83 | 715.75 |
| 55 | | 716-722 | 717.25 | 720.83 | 721.75 |
| 56 | | 722-728 | 723.25 | 726.83 | 727.75 |
| 57 | | 728-734 | 729.25 | 732.83 | 733.75 |
| 58 | | 734-740 | 735.25 | 738.83 | 739.75 |
| 59 | | 740-746 | 741.25 | 744.83 | 745.75 |
| 60 | | 746-752 | 747.25 | 750.83 | 751.75 |
| 61 | | 752-758 | 753.25 | 756.83 | 757.75 |
| 62 | | 758-764 | 759.25 | 762.83 | 763.75 |
| 63 | | 764-770 | 765.25 | 768.83 | 769.75 |
| 64 | | 770-776 | 771.25 | 774.83 | 775.75 |
| 65 | | 776-782 | 777.25 | 780.83 | 781.75 |
| 66 | | 782-788 | 783.25 | 786.83 | 787.75 |
| 67 | | 788-794 | 789.25 | 792.83 | 793.75 |

# FREQUENCY CHARTS

## US & Canada (con't)

| CHAN | BW(MHZ) | PIX | COLOR | SOUND |
|---|---|---|---|---|
| 68 | 794-800 | 795.25 | 798.83 | 799.75 |
| 69 | 800-806 | 801.25 | 804.83 | 805.75 |
| 70** | 806-812 | 807.25 | 810.83 | 811.75 |
| 71 | 812-818 | 813.25 | 816.83 | 817.75 |
| 72 | 818-824 | 819.25 | 822.83 | 823.75 |
| 73 | 824-830 | 825.25 | 828.83 | 829.75 |
| 74 | 830-836 | 831.25 | 834.83 | 835.75 |
| 75 | 836-842 | 837.25 | 840.83 | 841.75 |
| 76 | 842-848 | 843.25 | 846.83 | 847.75 |
| 77 | 848-854 | 849.25 | 852.83 | 853.75 |
| 78 | 854-860 | 855.25 | 858.83 | 859.75 |
| 79 | 860-866 | 861.25 | 864.83 | 865.75 |
| 80 | 866-872 | 867.25 | 870.83 | 871.75 |
| 81 | 872-878 | 873.25 | 876.83 | 877.75 |
| 82 | 878-884 | 879.25 | 882.83 | 883.75 |
| 83 | 884-890 | 885.25 | 888.83 | 889.75 |

**These frequencies between 806 and 890 MHz, formerly allocated to television broadcasting, are now allocated to the land mobile services. Operation on a secondary basis of some television translators may continue on these frequencies.

## US & Canada Intra-Channel Carrier Placement

| CHAN | BANDWIDTH | SOUND | PIX |
|---|---|---|---|
| B-1 | 14.5-20.5 | 14.75 | 19.25 |
| B-2 | 20.5-26.5 | 20.75 | 25.25 |
| B-3 | 26.5-32.5 | 26.75 | 31.25 |
| B-4 | 32.5-38.5 | 32.75 | 37.25 |
| B-5 | 38.5-44.5 | 38.75 | 43.25 |

## FM Channel Frequencies

| Chnl-MHz | | Chnl-MHz | | Chnl-MHz | |
|---|---|---|---|---|---|
| 201 | 88.1 | 235 | 94.9 | 269 | 101.7 |
| 202 | 88.3 | 236 | 95.1 | 270 | 101.9 |
| 203 | 88.5 | 237 | 95.3 | 271 | 102.1 |
| 204 | 88.7 | 238 | 95.5 | 272 | 102.3 |
| 205 | 88.9 | 239 | 95.7 | 273 | 102.5 |
| 206 | 89.1 | 240 | 95.9 | 274 | 102.7 |
| 207 | 89.3 | 241 | 96.1 | 275 | 102.9 |
| 208 | 89.5 | 242 | 96.3 | 276 | 103.1 |
| 209 | 89.7 | 243 | 96.5 | 277 | 103.3 |
| 210 | 89.9 | 244 | 96.7 | 278 | 103.5 |
| 211 | 90.1 | 245 | 96.9 | 279 | 103.7 |
| 212 | 90.3 | 246 | 97.1 | 280 | 103.9 |
| 213 | 90.5 | 247 | 97.3 | 281 | 104.1 |
| 214 | 90.7 | 248 | 97.5 | 282 | 104.3 |
| 215 | 90.9 | 249 | 97.7 | 283 | 104.5 |
| 216 | 91.1 | 250 | 97.9 | 284 | 104.7 |
| 217 | 91.3 | 251 | 98.1 | 285 | 104.9 |
| 218 | 91.5 | 252 | 98.3 | 286 | 105.1 |
| 219 | 91.7 | 253 | 98.5 | 287 | 105.3 |
| 220 | 91.9 | 254 | 98.7 | 288 | 105.5 |
| 221 | 92.1 | 255 | 98.9 | 289 | 105.7 |
| 222 | 92.3 | 256 | 99.1 | 290 | 105.9 |
| 223 | 92.5 | 257 | 99.3 | 291 | 106.1 |
| 224 | 92.7 | 258 | 99.5 | 292 | 106.3 |
| 225 | 92.9 | 259 | 99.7 | 293 | 106.5 |
| 226 | 93.1 | 260 | 99.9 | 294 | 106.7 |
| 227 | 93.3 | 261 | 100.1 | 295 | 106.9 |
| 228 | 93.5 | 262 | 100.3 | 296 | 107.1 |
| 229 | 93.7 | 263 | 100.5 | 297 | 107.3 |
| 230 | 93.9 | 264 | 100.7 | 298 | 107.5 |
| 231 | 94.1 | 265 | 100.9 | 299 | 107.7 |
| 232 | 94.3 | 266 | 101.1 | 300 | 107.9 |
| 233 | 94.5 | 267 | 101.3 | | |
| 234 | 94.7 | 268 | 101.5 | | |

## Australian TV Channels

| Chan | Pix | Sound |
|---|---|---|
| A-0 | 46.25 | 51.75 |
| A-1 | 57.25 | 62.75 |
| A-2 | 64.25 | 69.75 |
| A-3 | 86.25 | 91.75 |
| A-4 | 95.25 | 100.75 |
| A-5 | 102.25 | 107.75 |
| A-5A | 138.25 | 143.75 |
| A-6 | 175.25 | 180.75 |
| A-7 | 182.25 | 187.75 |
| A-8 | 189.25 | 194.75 |
| A-9 | 196.25 | 201.75 |
| A-10 | 209.25 | 214.75 |
| A-11 | 215.00 | 222.00 |

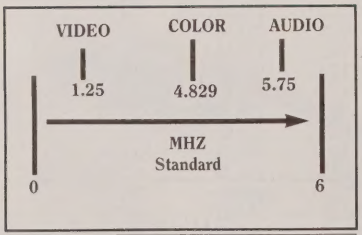
## Italian TV Channels

| Chan | Pix | Sound |
|---|---|---|
| A | 53.75 | 59.25 |
| B | 62.25 | 67.75 |
| C | 82.25 | 87.75 |
| D | 175.25 | 180.75 |
| E | 183.75 | 189.25 |
| F | 192.25 | 197.75 |
| G | 201.25 | 206.75 |
| H | 210.25 | 215.75 |
| H-1 | 217.25 | 222.75 |

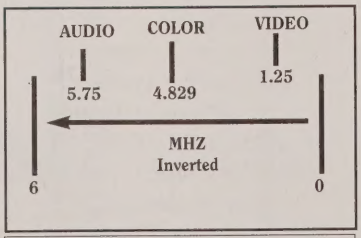
## HRC Frequencies

| CHAN | Nominal Video Freq MHz | Video Freq. MHz | Deviation from Nominal MHz |
|---|---|---|---|
| LOWBAND | | | |
| 2 | 55.25 | 54 | -1.25 |
| 3 | 61.25 | 60 | -1.25 |
| 4 | 67.25 | 66 | -1.25 |
| 5 | 77.25 | 78 | +.75 |
| 6 | 83.25 | 84 | +.75 |
| MIDBAND | | | |
| A-2 | 109.25 | 108 | -1.25 |
| A-1 | 115.25 | 114 | -1.25 |
| A | 121.25 | 120 | -1.25 |
| B | 127.25 | 126 | -1.25 |
| C | 133.25 | 132 | -1.25 |
| D | 139.25 | 138 | -1.25 |
| E | 145.25 | 144 | -1.25 |
| F | 151.25 | 150 | -1.25 |
| G | 157.25 | 156 | -1.25 |
| H | 163.25 | 162 | -1.25 |
| I169.25 | 168 | -1.25 | |
| HIGHBAND | | | |
| 7 | 175.25 | 174 | -1.25 |
| 8 | 181.25 | 180 | -1.25 |
| 9 | 187.25 | 186 | -1.25 |
| 10 | 193.25 | 192 | -1.25 |
| 11 | 199.25 | 198 | -1.25 |
| SUPERBAND | | | |
| J | 217.25 | 216 | -1.25 |
| K | 223.25 | 222 | -1.25 |
| L | 229.25 | 228 | -1.25 |
| M | 233.25 | 234 | -1.25 |
| N | 241.25 | 240 | -1.25 |
| O | 247.25 | 246 | -1.25 |
| P | 253.25 | 252 | -1.25 |
| Q | 259.25 | 258 | -1.25 |
| R | 265.25 | 264 | -1.25 |
| S | 271.25 | 270 | -1.25 |
| T | 277.25 | 276 | -1.25 |
| U | 283.25 | 282 | -1.25 |
| V | 289.25 | 288 | -1.25 |
| W | 295.25 | 294 | -1.25 |
| HYPERBAND | | | |
| AA | 301.25 | 300 | -1.25 |
| BB | 307.25 | 306 | -1.25 |
| CC | 313.25 | 312 | -1.25 |
| DD | 319.25 | 318 | -1.25 |
| EE | 325.25 | 324 | -1.25 |
| FF | 331.25 | 330 | -1.25 |
| GG | 337.25 | 336 | -1.25 |
| HH | 343.25 | 342 | -1.25 |
| II | 349.25 | 348 | -1.25 |
| JJ | 355.25 | 354 | -1.25 |
| KK | 361.25 | 360 | -1.25 |
| LL | 367.25 | 366 | -1.25 |
| MM | 373.25 | 372 | -1.25 |
| NN | 379.25 | 378 | -1.25 |
| OO | 385.25 | 384 | -1.25 |
| PP | 391.25 | 390 | -1.25 |
| QQ | 397.25 | 396 | -1.25 |
| RR | 403.25 | 402 | -1.25 |

**NOTES:**
1) 88-108 MHz reserved for FM broadcast service in Canada and US.
2) 88-92 MHz reserved for non-commercial educational broadcasting.




US Standard Channel Format




US Inverted Channel Format

# FREQUENCY CHARTS

## TV CHANNELS

### Western European (E) Channels

| CHAN | BW(MHZ) | PIX | COLOR | SOUND |
|---|---|---|---|---|
| 2 | 47-54 | 48.25 | 52.68 | 53.75 |
| 3 | 54-61 | 55.25 | 59.68 | 60.75 |
| 4 | 61-68 | 62.25 | 66.68 | 67.75 |
| S-3 | 118-125 | 119.25 | 123.68 | 124.75 |
| S-4 | 125-132 | 126.25 | 130.68 | 131.75 |
| S-5 | 132-139 | 133.25 | 137.68 | 138.75 |
| S-6 | 139-146 | 140.25 | 144.68 | 145.75 |
| S-7 | 146-153 | 147.25 | 151.68 | 152.75 |
| S-8 | 153-160 | 154.25 | 158.68 | 159.75 |
| S-9 | 160-167 | 161.25 | 165.68 | 166.75 |
| S-10 | 167-174 | 168.25 | 172.68 | 173.75 |
| 5 | 174-181 | 175.25 | 179.68 | 180.75 |
| 6 | 181-188 | 182.25 | 186.68 | 187.75 |
| 7 | 188-195 | 189.25 | 193.68 | 194.75 |
| 8 | 195-202 | 196.25 | 200.68 | 201.75 |
| 9 | 202-209 | 203.25 | 207.68 | 208.75 |
| 10 | 209-216 | 210.25 | 214.68 | 215.75 |
| 11 | 216-223 | 217.25 | 221.68 | 222.75 |
| 12 | 223-230 | 224.25 | 228.68 | 229.75 |
| S-11 | 230-237 | 231.25 | 235.68 | 236.75 |
| S-12 | 237-244 | 238.25 | 242.68 | 243.75 |
| S-13 | 244-251 | 245.25 | 249.68 | 250.75 |
| S-14 | 251-258 | 252.25 | 256.68 | 257.75 |
| S-15 | 258-265 | 259.25 | 263.68 | 264.75 |
| S-16 | 265-272 | 266.25 | 270.68 | 271.75 |
| S-17 | 272-279 | 273.25 | 277.68 | 278.75 |
| 21 | 470-478 | 471.25 | 475.68 | 476.75 |
| 22 | 478-486 | 479.25 | 283.68 | 484.75 |
| 23 | 486-494 | 487.25 | 491.68 | 492.75 |
| 24 | 494-502 | 495.25 | 499.68 | 500.75 |
| 25 | 502-510 | 503.25 | 507.68 | 508.75 |
| 26 | 510-518 | 511.25 | 515.68 | 516.75 |
| 27 | 518-526 | 519.25 | 523.68 | 524.75 |
| 28 | 526-534 | 527.25 | 531.68 | 532.75 |
| 29 | 534-542 | 535.25 | 539.68 | 540.75 |
| 30 | 542-550 | 543.25 | 547.68 | 548.75 |
| 31 | 550-558 | 551.25 | 555.68 | 556.75 |
| 32 | 558-566 | 559.25 | 563.68 | 564.75 |
| 33 | 566-574 | 567.25 | 571.68 | 572.75 |
| 34 | 574-582 | 575.25 | 579.68 | 580.75 |
| 35 | 582-590 | 583.25 | 587.68 | 588.75 |
| 36 | 590-598 | 591.25 | 595.68 | 596.75 |
| 37 | 598-606 | 599.25 | 603.68 | 604.75 |
| 38 | 606-614 | 607.25 | 611.68 | 612.75 |
| 39 | 614-622 | 615.25 | 619.68 | 620.75 |
| 40 | 622-630 | 623.25 | 627.68 | 628.75 |
| 41 | 630-638 | 631.25 | 635.68 | 636.75 |
| 42 | 638-646 | 639.25 | 643.68 | 644.75 |
| 43 | 646-654 | 647.25 | 651.68 | 652.75 |
| 44 | 654-662 | 655.25 | 659.68 | 660.75 |
| 45 | 662-670 | 663.25 | 667.68 | 668.75 |
| 46 | 670-678 | 671.25 | 675.68 | 676.75 |
| 47 | 678-686 | 679.25 | 683.68 | 684.75 |
| 48 | 686-694 | 687.25 | 691.68 | 692.75 |
| 49 | 694-702 | 695.25 | 699.68 | 700.75 |
| 50 | 702-710 | 703.25 | 707.68 | 708.75 |
| 51 | 710-718 | 711.25 | 715.68 | 716.75 |
| 52 | 718-726 | 719.25 | 723.68 | 724.75 |
| 53 | 726-734 | 727.25 | 731.68 | 732.75 |
| 54 | 734-742 | 735.25 | 739.68 | 740.75 |
| 55 | 742-750 | 743.25 | 747.68 | 748.75 |
| 56 | 750-758 | 751.25 | 755.68 | 756.75 |
| 57 | 758-766 | 759.25 | 763.68 | 764.75 |
| 58 | 766-774 | 767.25 | 771.68 | 772.75 |
| 59 | 774-782 | 775.25 | 779.68 | 780.75 |
| 60 | 782-790 | 783.25 | 787.68 | 788.75 |
| 61 | 790-798 | 791.25 | 795.68 | 796.75 |
| 62 | 798-806 | 799.25 | 803.68 | 804.75 |
| 63 | 806-814 | 807.25 | 811.68 | 812.75 |
| 64 | 814-822 | 815.25 | 819.68 | 820.75 |
| 65 | 822-830 | 823.25 | 827.68 | 828.75 |
| 66 | 830-838 | 831.25 | 835.68 | 836.75 |
| 67 | 838-846 | 839.25 | 843.68 | 844.75 |
| 68 | 846-854 | 847.25 | 851.68 | 852.75 |
| 69 | 854-862 | 855.25 | 859.68 | 860.75 |

### Eastern European

| CHAN | PIX | SOUND |
|---|---|---|
| OIRT-1 | 49.75 | 56.25 |
| OIRT-2 | 59.25 | 65.75 |
| OIRT-3 | 77.25 | 83.75 |
| OIRT-4 | 85.25 | 91.75 |
| OIRT-5 | 93.25 | 99.75 |
| OIRT-6 | 175.25 | 181.75 |
| OIRT-7 | 183.25 | 189.75 |
| OIRT-8 | 191.25 | 197.75 |
| OIRT-9 | 199.25 | 205.75 |
| OIRT-10 | 207.25 | 213.75 |
| OIRT-11 | 215.25 | 221.75 |
| OIRT-12 | 223.25 | 229.75 |

### Japanese

| CHAN | PIX | SOUND |
|---|---|---|
| J-1 | 91.25 | 95.75 |
| J-2 | 97.25 | 101.75 |
| J-3 | 103.25 | 107.75 |
| J-4 | 171.25 | 175.75 |
| J-5 | 177.25 | 181.75 |
| J-6 | 183.25 | 187.75 |
| J-7 | 189.25 | 193.75 |
| J-8 | 193.25 | 197.75 |
| J-9 | 199.25 | 203.75 |
| J-10 | 205.25 | 209.75 |
| J-11 | 211.25 | 215.75 |
| J-12 | 217.25 | 221.75 |
| J-45 | 663.25 | 667.75 |
| J-46 | 669.25 | 673.75 |
| J-47 | 675.25 | 679.75 |
| J-48 | 681.25 | 685.75 |
| J-49 | 687.25 | 691.75 |
| J-50 | 693.75 | 697.75 |
| J-51 | 699.25 | 703.75 |
| J-52 | 705.25 | 709.75 |
| J-53 | 711.25 | 715.75 |
| J-54 | 717.25 | 721.75 |
| J-55 | 723.25 | 727.75 |
| J-56 | 729.25 | 733.75 |
| J-57 | 735.25 | 739.75 |
| J-58 | 741.25 | 745.75 |
| J-59 | 747.25 | 751.75 |
| J-60 | 753.25 | 757.75 |
| J-61 | 759.25 | 763.75 |
| J-62 | 765.02 | 769.75 |

### British

| CHAN | PIX | SOUND |
|---|---|---|
| B-1 | 45.00 | 41.50 |
| B-2 | 51.75 | 48.25 |
| B-3 | 56.75 | 53.25 |
| B-4 | 61.75 | 58.25 |
| B-5 | 66.75 | 63.25 |
| B-6 | 179.75 | 176.25 |
| B-7 | 184.75 | 181.25 |
| B-8 | 189.75 | 186.75 |
| B-9 | 194.75 | 191.25 |
| B-10 | 199.75 | 196.26 |
| B-11 | 204.75 | 201.25 |
| B-12 | 209.75 | 206.25 |
| B-13 | 214.75 | 211.25 |
| B-14 | 219.75 | 216.25 |

### French Overseas

| CHAN | PIX | SOUND |
|---|---|---|
| F-4 | 175.25 | 161.75 |
| F-5 | 183.25 | 180.75 |
| F-6 | 191.25 | 197.75 |
| F-7 | 199.25 | 205.75 |
| F-8 | 207.25 | 213.75 |
| F-9 | 215.25 | 221.75 |

### South African Channels

| CHAN | BW(MHZ) | PIX | SOUND |
|---|---|---|---|
| 4 | 174-182 | 175.25 | 181.25 |
| 5 | 182-190 | 183.25 | 189.25 |
| 6 | 190-198 | 191.25 | 197.25 |
| 7 | 198-206 | 199.25 | 205.25 |
| 8 | 206-214 | 207.25 | 213.25 |
| 9 | 214-222 | 215.25 | 221.25 |
| 10 | 222-230 | 223.25 | 229.25 |
| 11 | 230-238 | 231.25 | 237.25 |
| 13 | 246-254 | 247.43 | 253.43 |
| 21 | 470-478 | 471.25 | 477.25 |
| 22 | 478-486 | 479.25 | 485.25 |
| 23 | 486-494 | 487.25 | 493.25 |
| 24 | 494-502 | 495.25 | 501.25 |
| 25 | 502-510 | 503.25 | 509.25 |
| 26 | 510-518 | 511.25 | 517.25 |
| 27 | 518-526 | 519.25 | 525.25 |
| 28 | 526-534 | 527.25 | 533.25 |
| 29 | 534-542 | 535.25 | 541.25 |
| 30 | 542-550 | 543.25 | 549.25 |
| 31 | 550-558 | 551.25 | 557.25 |
| 32 | 558-566 | 559.25 | 565.25 |
| 33 | 566-574 | 567.25 | 573.25 |
| 34 | 574-582 | 575.25 | 581.25 |
| 35 | 582-590 | 583.25 | 589.25 |
| 36 | 590-598 | 591.25 | 597.25 |
| 37 | 598-606 | 599.25 | 605.25 |
| 39 | 614-622 | 615.25 | 621.25 |
| 40 | 622-630 | 623.25 | 629.25 |
| 41 | 630-638 | 631.25 | 637.25 |
| 42 | 638-646 | 639.25 | 645.25 |
| 43 | 646-654 | 647.25 | 653.25 |
| 44 | 654-662 | 655.25 | 661.25 |
| 45 | 662-670 | 663.25 | 669.25 |
| 46 | 670-678 | 671.25 | 677.25 |
| 47 | 678-686 | 679.25 | 685.25 |
| 48 | 686-694 | 687.25 | 693.25 |
| 49 | 694-702 | 695.25 | 701.25 |
| 50 | 702-710 | 703.25 | 709.25 |
| 51 | 710-718 | 711.25 | 717.25 |
| 52 | 718-726 | 719.25 | 725.25 |
| 53 | 726-734 | 727.25 | 733.25 |
| 54 | 734-742 | 735.25 | 741.25 |
| 55 | 742-750 | 743.25 | 749.25 |
| 56 | 750-758 | 751.25 | 757.25 |
| 57 | 758-766 | 759.25 | 765.25 |
| 58 | 766-774 | 767.25 | 773.25 |
| 59 | 774-782 | 775.25 | 781.25 |
| 60 | 782-790 | 783.25 | 789.25 |
| 61 | 790-798 | 791.25 | 797.25 |
| 62 | 798-806 | 799.25 | 805.25 |
| 63 | 806-814 | 807.25 | 813.25 |
| 64 | 814-822 | 815.25 | 821.25 |
| 65 | 822-830 | 823.25 | 829.25 |
| 66 | 830-838 | 831.25 | 837.25 |
| 67 | 838-846 | 839.25 | 845.25 |
| 68 | 846-854 | 847.25 | 853.25 |

### French

| CHAN | PIX | SOUND |
|---|---|---|
| F-2 | 52.40 | 41.25 |
| F-4 | 65.55 | 54.40 |
| F-5 | 164.00 | 175.15 |
| F-6 | 173.40 | 162.25 |
| F-7 | 177.15 | 188.30 |
| F-8A | 185.25 | 174.10 |
| F-8 | 186.55 | 175.40 |
| F-9 | 190.30 | 201.45 |
| F-10 | 199.70 | 188.55 |
| F-11 | 203.45 | 214.60 |
| F-12 | 212.85 | 201.70 |

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**Printed by The Electric Press, div. C&E Corp.** **Printed on recycled paper.**

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- **CATV:** Cable TV Systems
- **SMATV:** Satellite TV Systems
- **MMDS:** Microwave Wireless TV
- **LPTV:** Low Power TV Broadcast
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## CATV/SMATV

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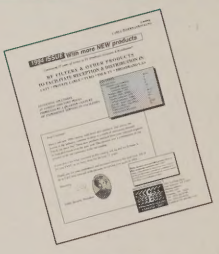

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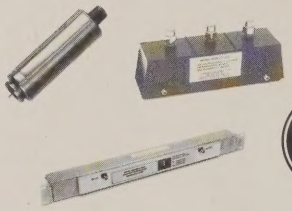

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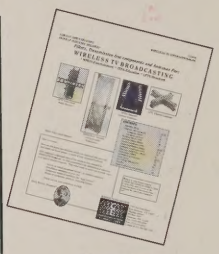

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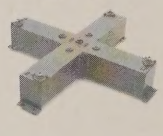

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*Emily & Glyn Bostick helped expand the world's CATV/MMDS/LPTV industry. They have contributed much technical writing and many original products to the TV industries.*

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